JCM Banknote Acceptor

MAYA

Service Manual

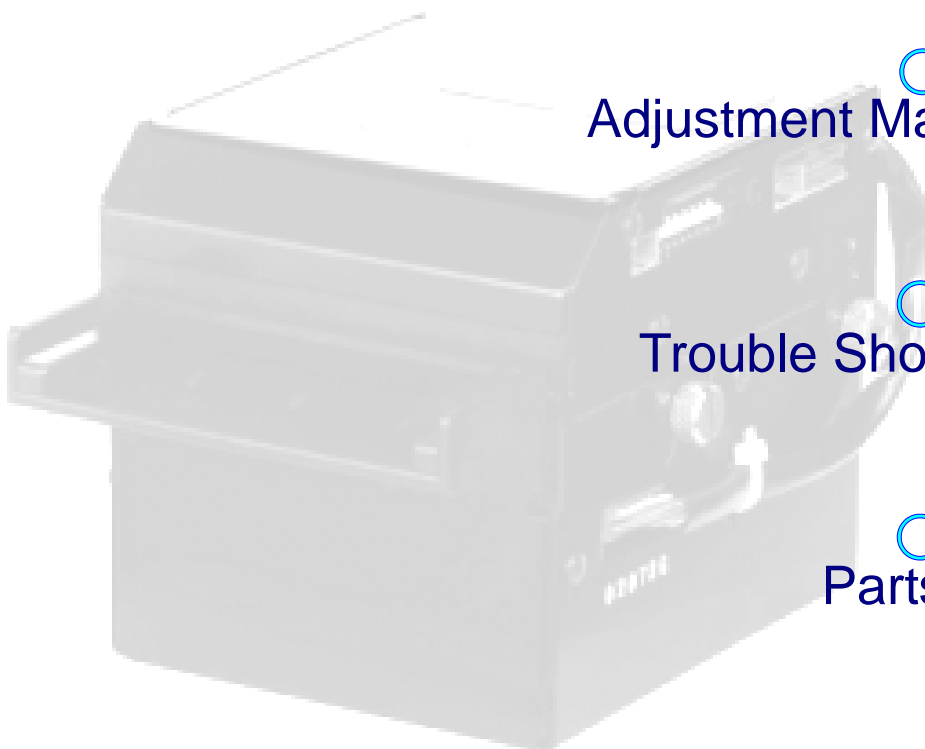Japan Cash Machine. Banknote. Acceptors

Contents
Service Manual MAYA

JCM
GLOBAL

JCM Banknote Acceptor

MAYA
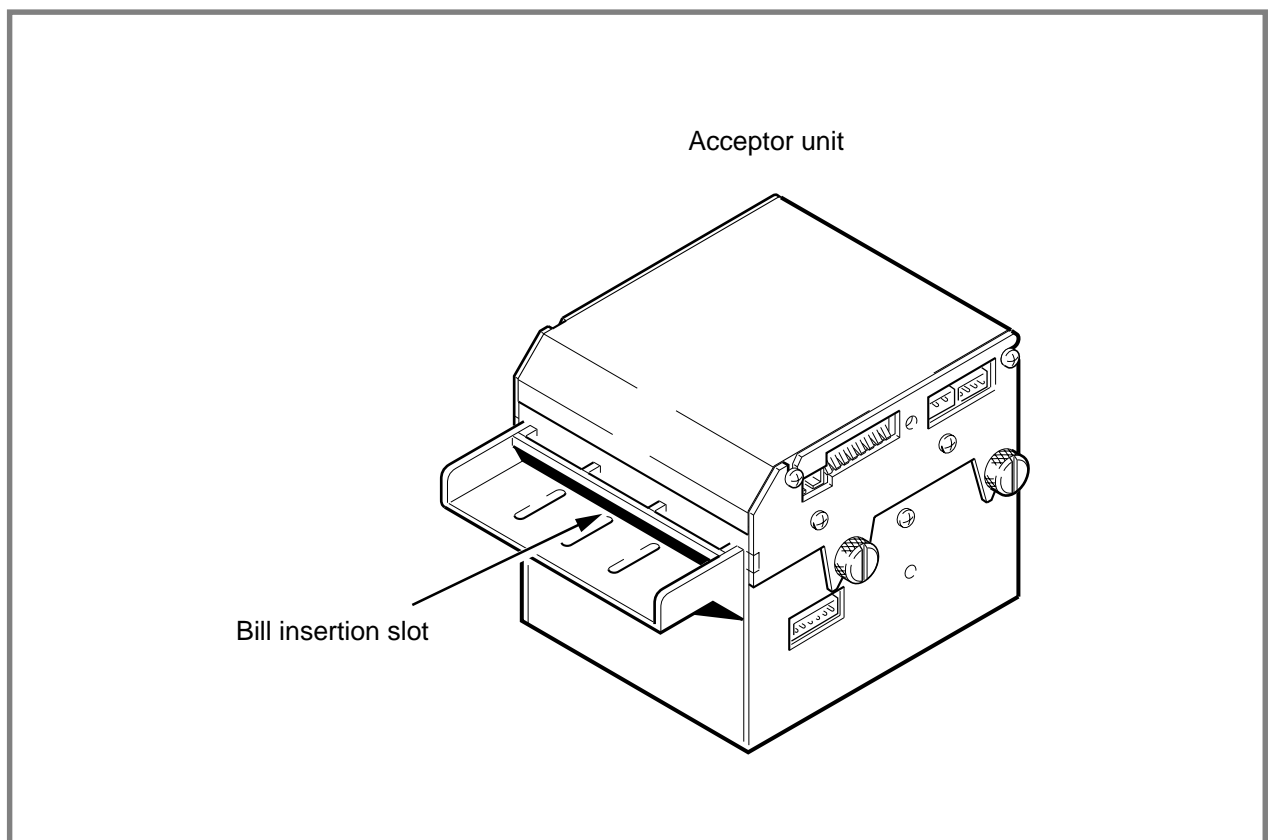
Operation Manual

Contents

1 Features

Validator MAYA provides the following features.
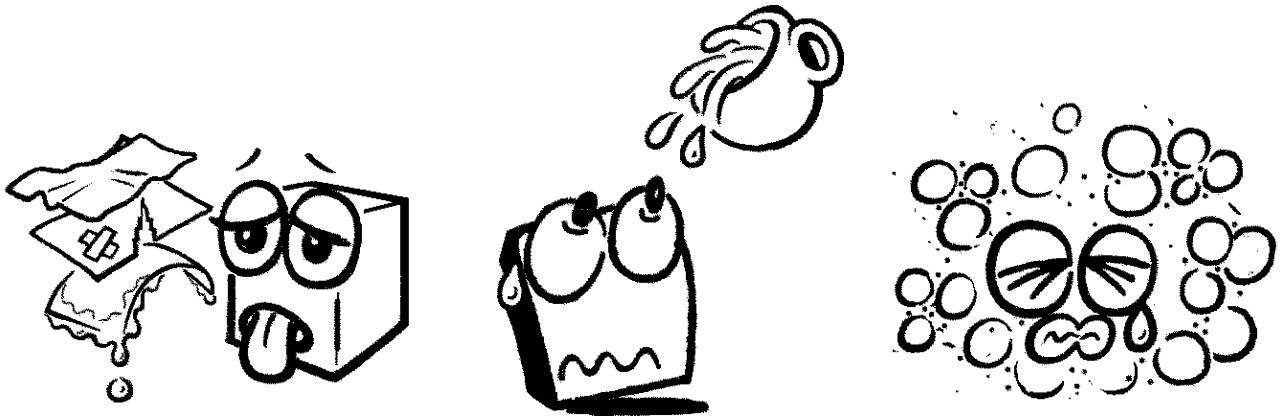
• Setting for accepting a bill
You can set the DIP switch to accept or refuse each of 5 types of bills independently. You can also set the DIP switch to accept all 5 types of bills.

2 Component Names

Acceptor unit

Bill insertion slot

3 Precautions

1. Do not insert a torn, folded, or wet bill. It will get jammed in the unit.

2. Never expose the unit to water. The unit contains several precision electronic devices which can be damaged if water or any liquid is sprayed or spilled into the unit.

3. Do not install the unit in a dusty environment. Dust will lower the performance of the bill sensor.

4 When the Acceptor is Jammed

(1) Loosen 4 knobs each from either side to open the acceptor head and remove the jammed bills.
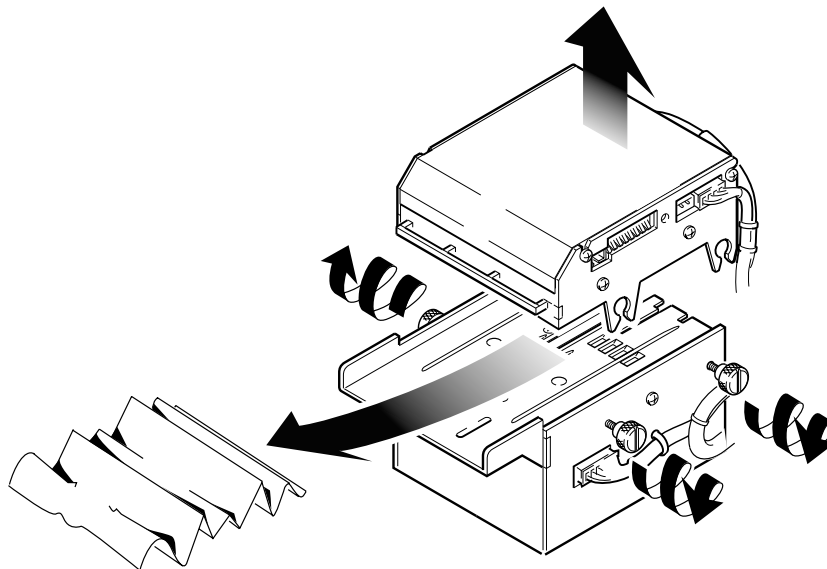
5 Cleaning

When the scanning unit and its sensor becomes dirty, this could cause paper jams and deterioration of the bill sensing capability. Periodically open the acceptor and bill theft prevention unit and clean the inner parts of these units.
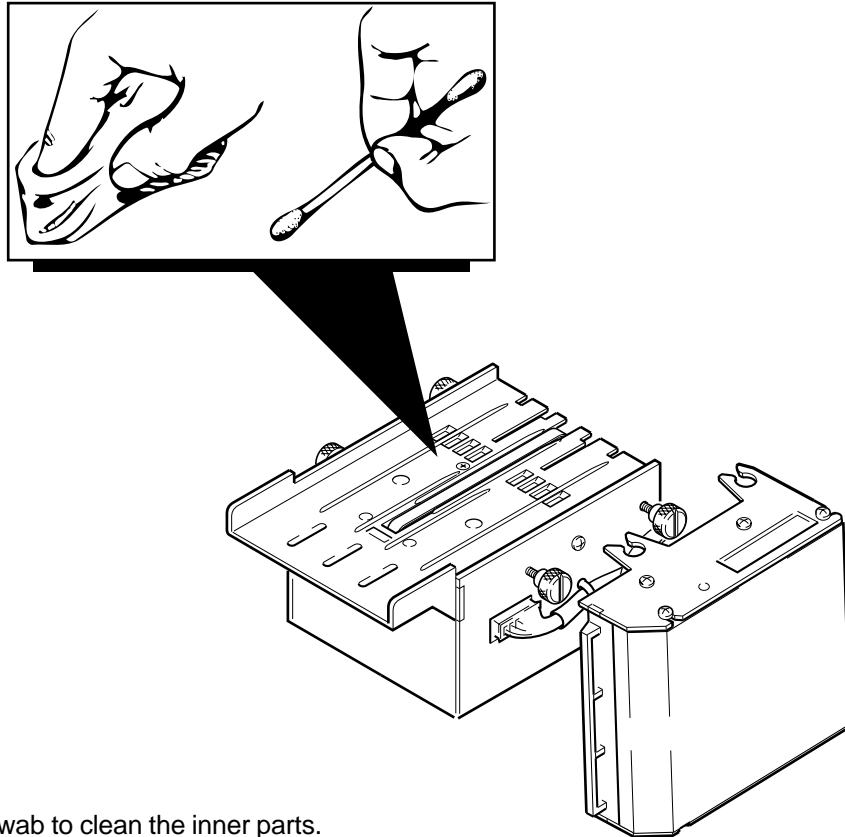
Use a soft cloth or cotton swab to clean the inner parts. If you cannot remove a stain, wipe it using a cloth or cotton swab moistened with a standard head cleaner sold in the market. Never use organic solvents such as thinners to clean the inside parts.

• Do no use organic solvent like thinner.

6 Installation

(1) Installing the unit

There are 4 installation holes each on the rear and
bottom cover panels of the unit.
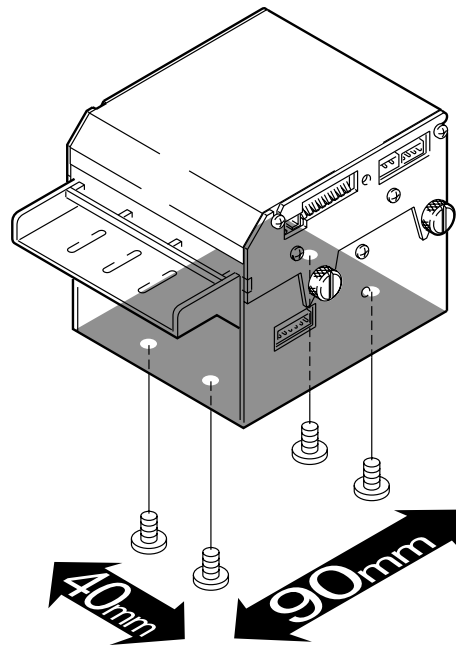
(2) Replacing the width guides of the bill insertion slot

To replace the width guides of the bill insertion slot,
remove the screws from the back side of these width
guides.

7 Cabling

External harness

Pin header
IL-S-5P-S2L2-EF（JAE）

Housing
IL-S-5S-S2C2-S（JAE）

Contact
IL-S-C2-S-10000（JAE）

Applicable cable material
 AWG26 UL 1007

Box type plug
 XG4C-2634（OMRON）

MIL type socket
XG4M-2630-T（OMRON）

Lock lever
XG4Z-0002   （OMRON）

Applicable cable material
 1.27mm pitch flat cable
AWG28 UL2651
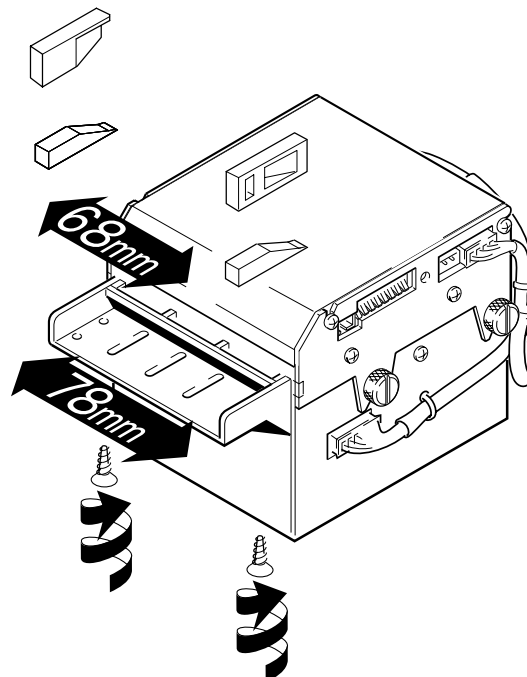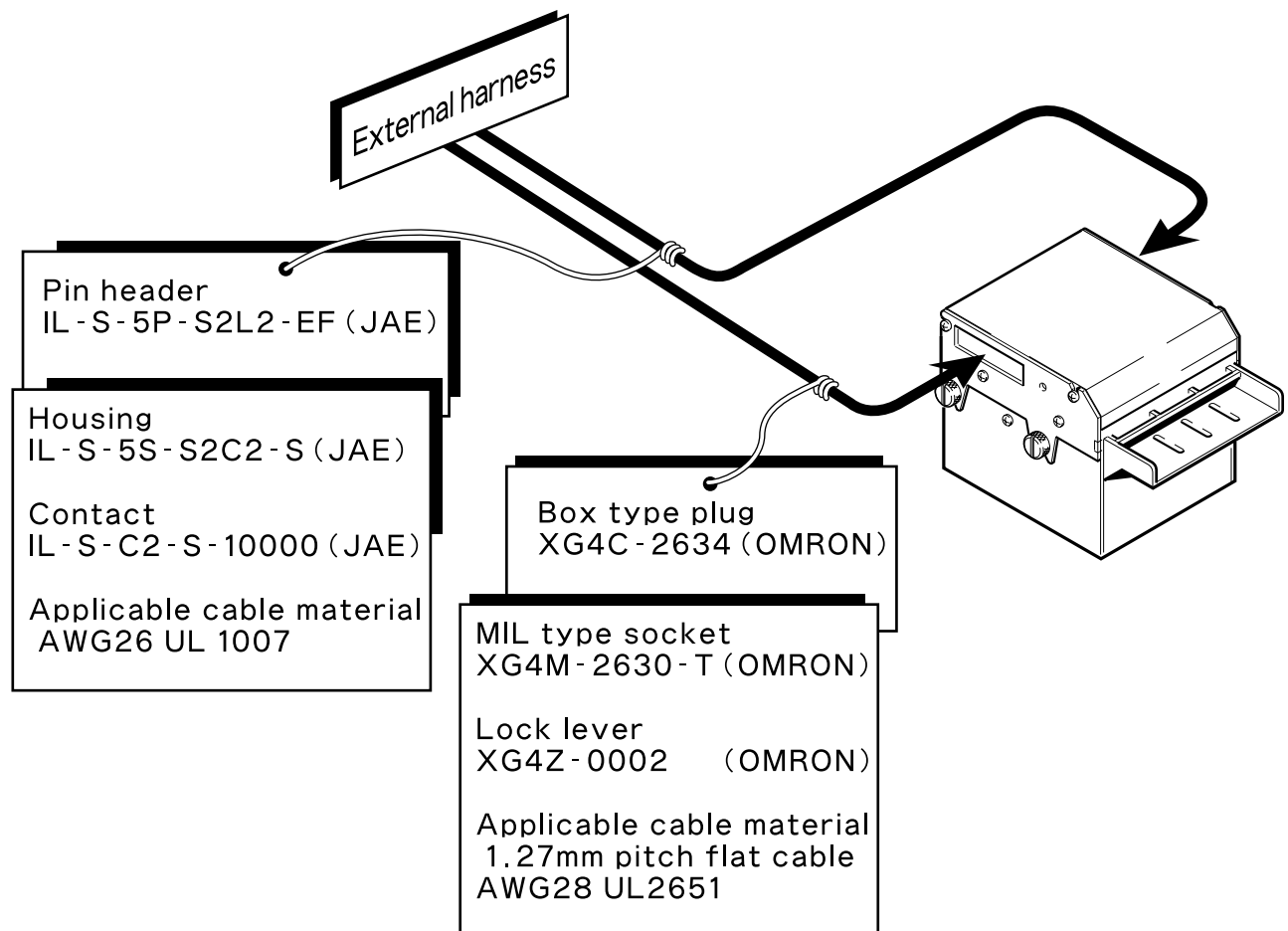
8 Pin Assignment

CPU BOARD   CN 1

```
        25                    1
     ┌─────────────────────────┐
     │ ○○○○○○○○○○○○○           │
     │  ○○○○○○○○○○○○○          │
     └─────────────────────────┘
        26                    2
```
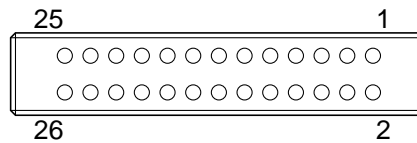
Pin No.	Name of Signal		I / O	ACTIV	EXPLANATION
1	Vcc				Power supply 12V
3					
2	Vss				GND
4					
5	VEND1	(+)	OUT	LO	Received currency type signal
6		(−)			
7	VEND2	(+)	OUT	LO	Received currency type signal
8		(−)			
9	VEND3	(+)	OUT	LO	Received currency type signal
10		(−)			
11	BUSY	(+)	OUT	HI	Signal to be output during acceptor operation
12		(−)			
13	ABN	(+)	OUT	HI	Signal to be output when an error has occurred in
14		(−)			the acceptor
15	INH	(+)	I N	HI	Bill reception inhibit signal
16		(−)			
17	ACK	(+)	I N	LO	Signal sent from external device to store bill after
18		(−)			validator outputs the VEND signal.
19	REJ	(+)	I N	LO	Signal sent from external device to return bill after
20		(−)			validator outputs the VEND signal.
21	DATA	(+)	OUT	LO	Final signal of the VEND signal.
22	VALID	(−)			
23	STKF	(+)	OUT	HI	Signal to be output when the stacker is full.
24		(−)			
25	NC				Not used.
26	NC				

CN 4

```
        ┌───────────┐
        │ ○ ○ ○ ○ ○ │
        └───────────┘
         1         5
```
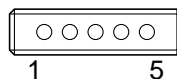
Pin No.	Name of Signal	EXPLANATION
1	LED1	Signal output to turn on the LED when a bill can be received.
2	LED2	Signal output to turn on the LED when a bill can be received.
3	LED3	Signal output to turn on the LED when an error is detected or during a trouble status.
4	LED4	Signal output to turn on the LED when an error is detected or during a trouble status.
5	GND	

9 DIP Switch Setting

DIP switch setting (ID-0A2)

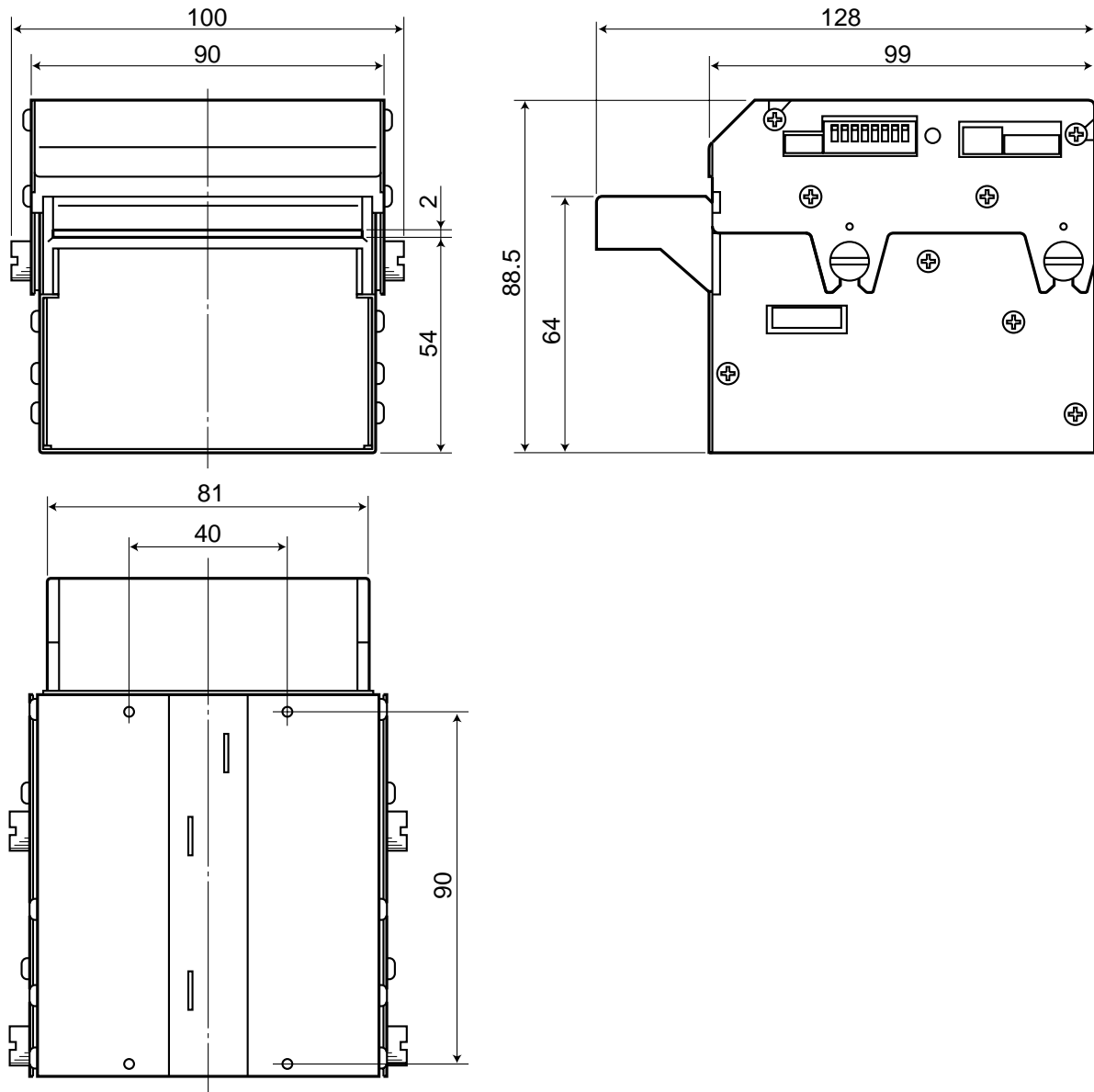You can set the type of currency to be received, the escrow mode, and other functions using the DIP switch settings.


```
-----------------------------------------------|-----------------------------
1  Setting to OFF  (ON:Test and adjustment mode) |            (*)
-----------------------------------------------|-----------------------------
         Normal Operation (SW 6=OFF)           |(SW 6=ON) Enable/Disable
------------------------------------------------|\        Denomination Mode
             PULSE MODE         PARALLEL MODE   | -------------------------
2  ON :   SW2 SW3 Pulse-ms       Escrow mode    |
   OFF:  |----------------|      Non escrow mode |
----      |OFF OFF 150/180 |     -----------------|
3         |ON  OFF  80/120 |     Set to OFF       |
          |OFF ON   50/ 50 |                      |
          |ON  ON   50/300 |                      |
------------------------------------------------|
4  ON :   0.5 EUR / pulse        Set to OFF      |
   OFF:     5 EUR / pulse                        |
------------------------------------------------|
5  ON :    PB Unit -Operation                   |
   OFF:   Head only-Operation                   |
------------------------------------------------|/ Setting to ON
6  Setting to OFF (Normal Operation)            |  (Enable/Disable
                                                |  Denomination Set Mode)
------------------------------------------------|-------------------------
7  ON :   High  Security mode                   |  ON:  Disable
   OFF:  Normal Security mode                   |  OFF: Enable
------------------------------------------------|\    Denomination Setting
8  ON :  Pulse mode                             | -------------------------
   OFF:  Parallel mode                          |
------------------------------------------------|-------------------------
```

10 General Specifications

1	Type of currency accepted	See relevant specifications.
2	Direction of insertion	See relevant specification.
3	Receiving rate	90% or more.Be sure to use the specified guide block for the bill insertion slot. Includes the first time return and second timeacceptance. The following bills, however, are exluded:

    (1) Dirty, worn, wet, torn, and badly wrinkled bills.

    (2) Bill with corner or edge folded and overlapped.

    (3) Bills which have considerably different cutting dimensions and print displacement.

4	Identification time	Approx. 3 seconds

(Time interval until the storage confirmation signal is output after bills are inserted and stacked.)

5	Interface	ID-0A2 : Photo coupler isolation input/output
7	Escrow	1 sheet escrow
8	Display	Four LEDs can be lit.

    (1) LED ON signal output 2 lines during bill reception enabled status.

    (2) LED ON signal output 2 lines during error detection and trouble status.

9	Power supply	DC 12V(± 5%)	
10	Power consumption	(1) Standby status	: 4VA
		(2) Operation status	: 5VA (Max. 19VA)
11	Operating environment	(1) Operating temperature	: 0 to 40 degrees Celsius
		(2) Storage temperature	: -20 to 70 degrees Celsius
		(3) Humidity	: 30% to 85%RH (without condensation)
		(4) Light disturbance	: Do not expose the unit to direct sunlight.
		(5) Installation	: Indoors
12	Outside dimensions	See the attached drawing.	
13	Weight	Main unit 0.7 kg	
14	Installation	Horizontal installation	

11 Outside Dimensions

unit:mm

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Disassembly and Assembly Procedure

Contents

1 Disassembling the Acceptor

1. Disassembling the upper scanning unit

(1) Loosen 2 screws each from either side to remove the upper cover together with the screws.
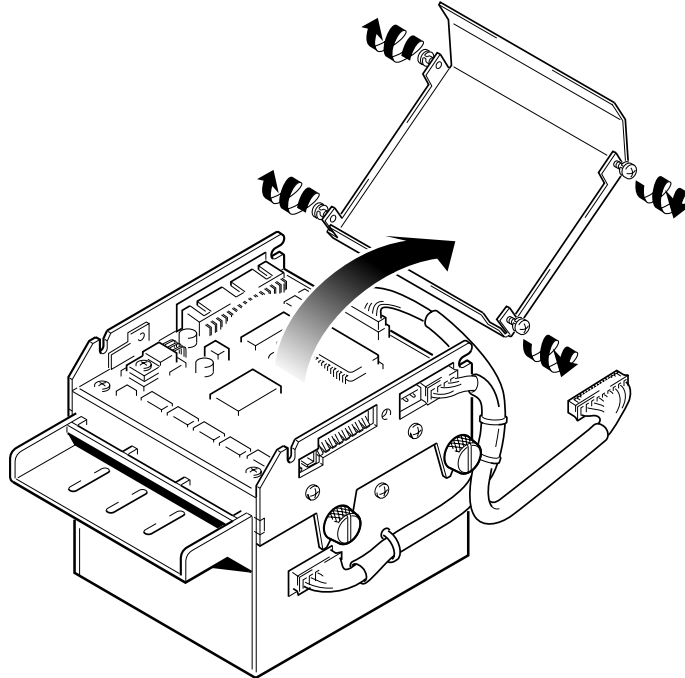
(2) Disconnect 2 connectors. Loosen 2 knobs each on both sides until the retaining bosses are released. Now lift the upper scanning unit to remove it.

Retaining boss
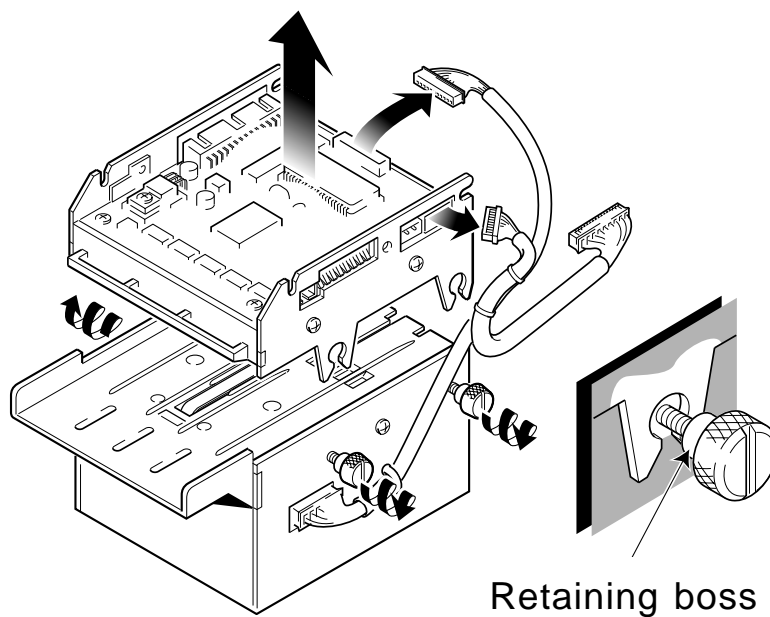
(3) Remove 1 screw from the left side panel.
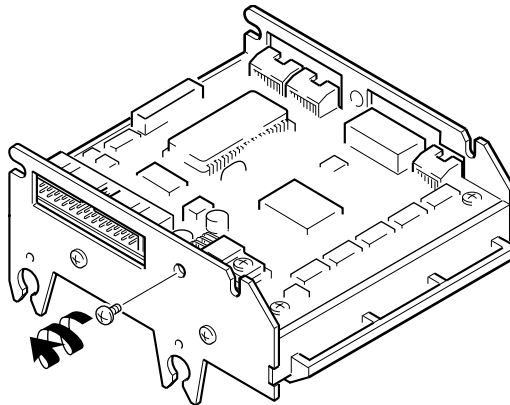
(4) Remove 3 screws and disconnect the connector to detach the main CPU board.
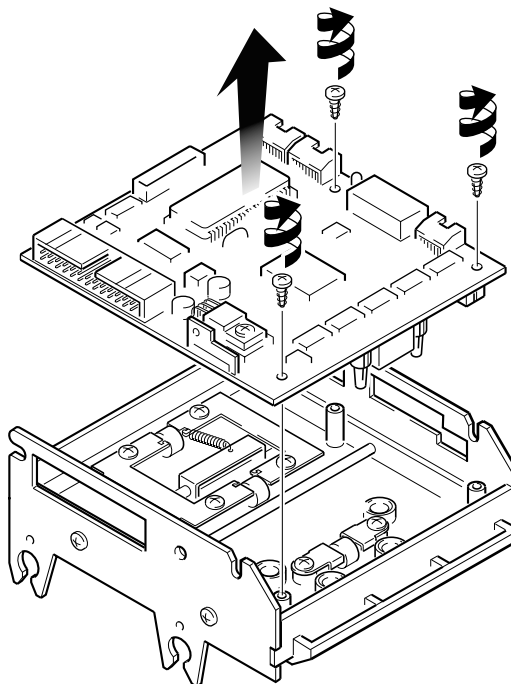
2. Disassembling the lower scanning unit

(1) Remove 2 screws forward from either side to remove the front cover plate. Next, remove 2 screws rear from either side and 1 screw from the bottom to remove the rear cover plate.
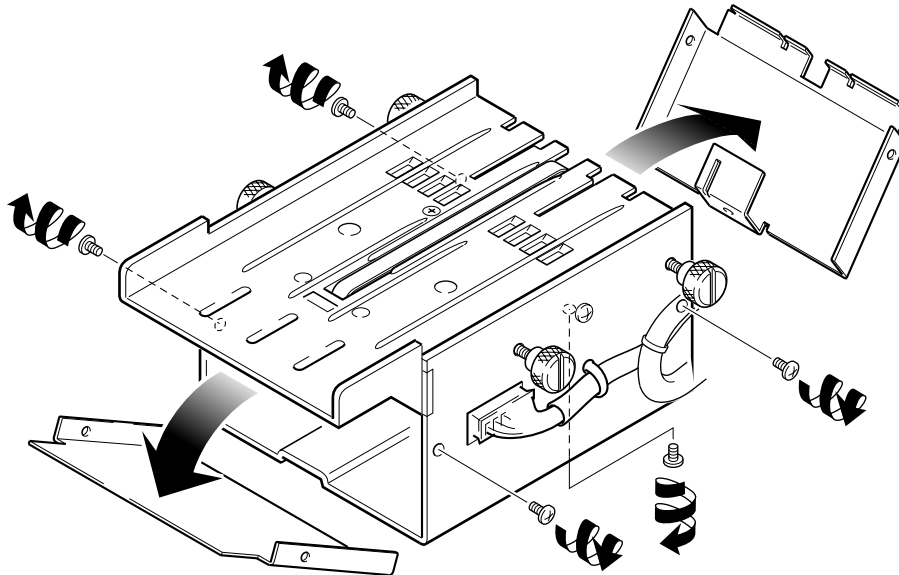
(2) Remove 2 knobs and 1 screw each from either side and disconnect the connector.
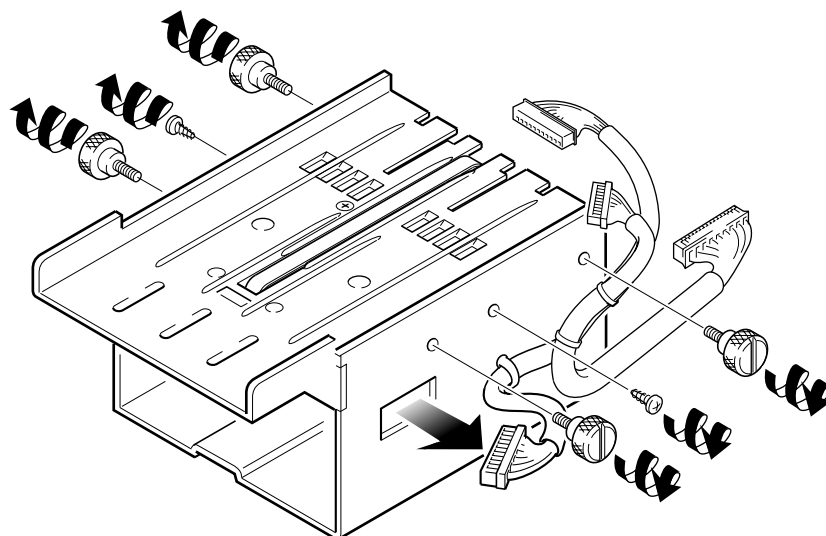
(3) Apply pressure to widen the frame on both sides and pull out the inner assembly.
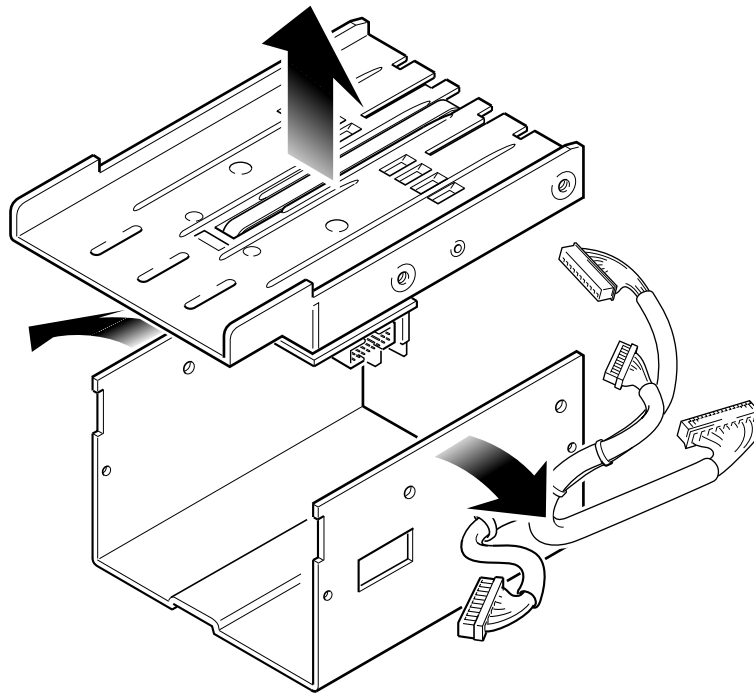
(4) Remove 1 screw from the top and disconnect the connector to detach the motor assembly.
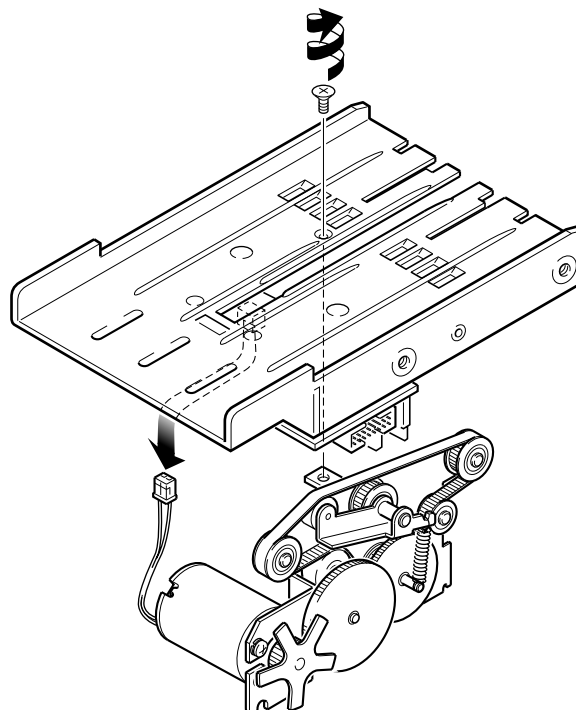
(5) Remove 2 screws and detach the LED board.
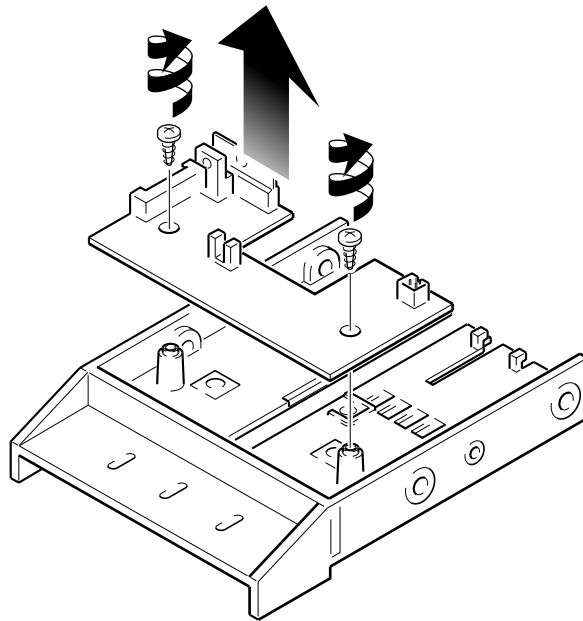
(6) Remove 1 screw to detach the motor.
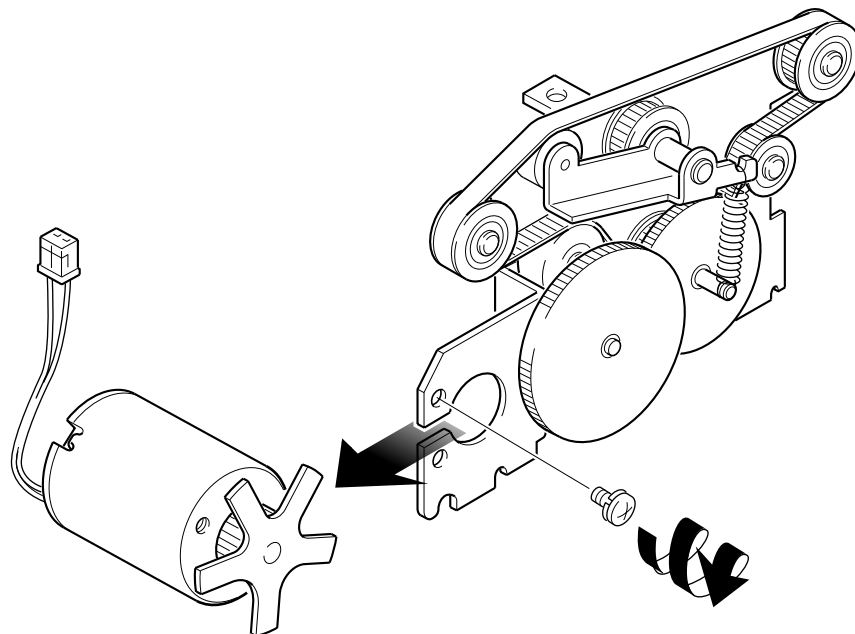
(7) Remove the spring, 2 E-rings, and 2 gears to dismount the belt.

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Adjustment Manual
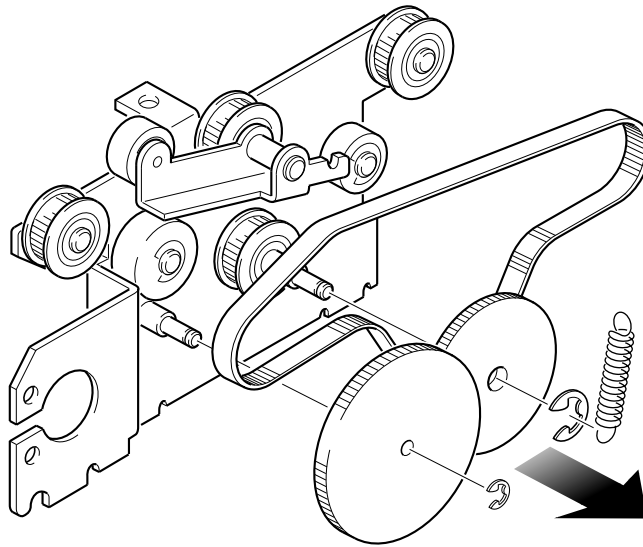
Contents

1 Connecting the EBA to the Personal Computer

1. Connect the EBA with the PC in the following manner.
   Turn OFF the power and set both EBA-10/410 and VM-450 to the test mode.

IBM PC
MS-DOSV6.0

VM-450 Test Bench

EBA-02

Connect the cable
to serial port

I/F
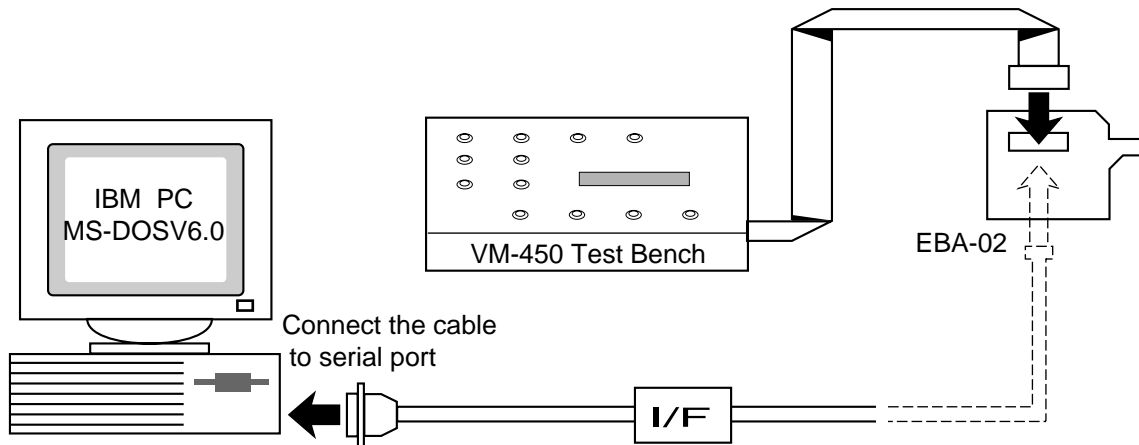
Tool required for adjustment
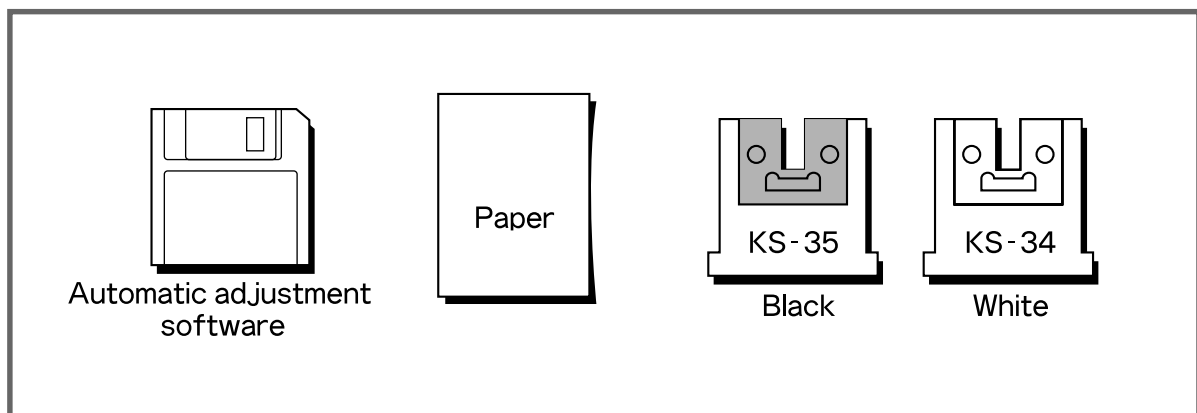
Automatic adjustment
software

Paper

KS-35
Black

KS-34
White

Note: Automatic adjustment can be performed while the stacker box is installed in the unit. When the
      guide block and mouthpiece are mounted on the insertion slot of the tray, remove them.

2 Setting the MAYA

(1) After confirming the VM-450 DIP switch settings and MAYA DIP switch settings, turn on VM-450.
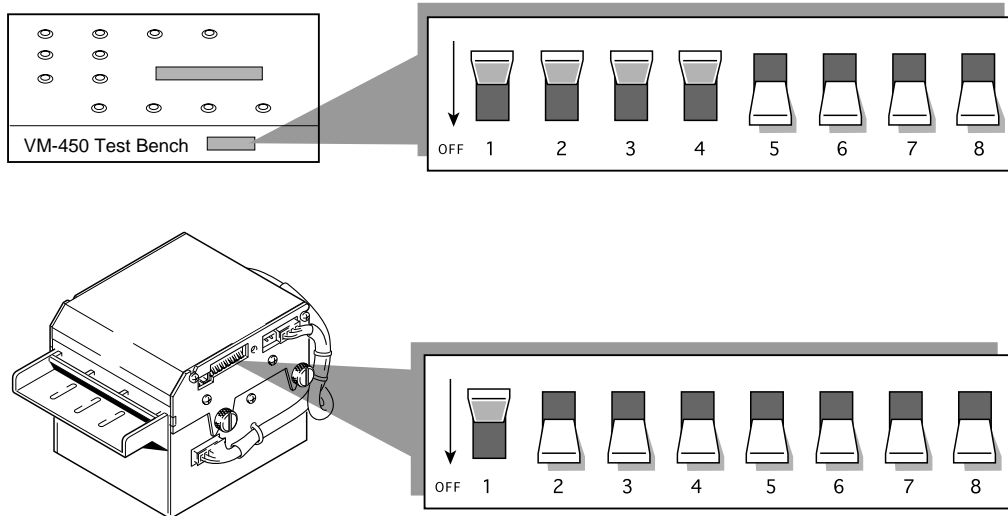
(2) The BSY LED of VM-450 will light and "_000_ _00" will appear on the segment display. At this time, the LED next to the DIP switch of MAYA will light.

This status is called the test mode. After the test mode, communications to the PC is enabled.

3 Running Environment of the Adjustment Software

Type of personal computer to be used: IBM PC or AT compatible machines

RS-232C communication ports(D-sub 9 pins).

Communication port address: 3F8 to 3FF (serial port 1)

OS: MS-DOS V6.0 (The software cannot be operated by Windows and Windows DOS prompt.)

4 Starting up the PC Adjustment Software

(1) Turn on the PC and start up MS-DOS.
   See the procedures in the relevant PC and MS-DOS manuals to turn on the PC and start up MS-DOS.
(2) When MS-DOS is started, set the floppy disk containing the adjustment software in the PC.
(3) Change the current drive to the disk drive in which the adjustment software floppy disk is inserted.
    For example, when the floppy disk is set in drive A:, type "A:".
(4) Start the adjustment software. Type "E02A-100" and press the Enter key.

5 Adjustment Procedure

(1) When the adjustment software is started, the initial screen (Screen 1) will appear. Confirm the
    model name, type, and version (V*.**).
    Press "1" and Enter key to select menu 1 (ADJUSTMENT).

```
****EBA-10(******)AUTO ADJUSTMENT PROGRAM V1.03****(01-21-1997)
********** MENU ******************** OPERATION *************
   1.ADJUSTMENT                         INPUT THE NUMBER.
   2.END
***********************************************************
**** MESSAGE ***********************************************
  1.ADJUSTMENT - SENSOR ADJUSTMENT FOR ACCEPTOR
***********************************************************
```
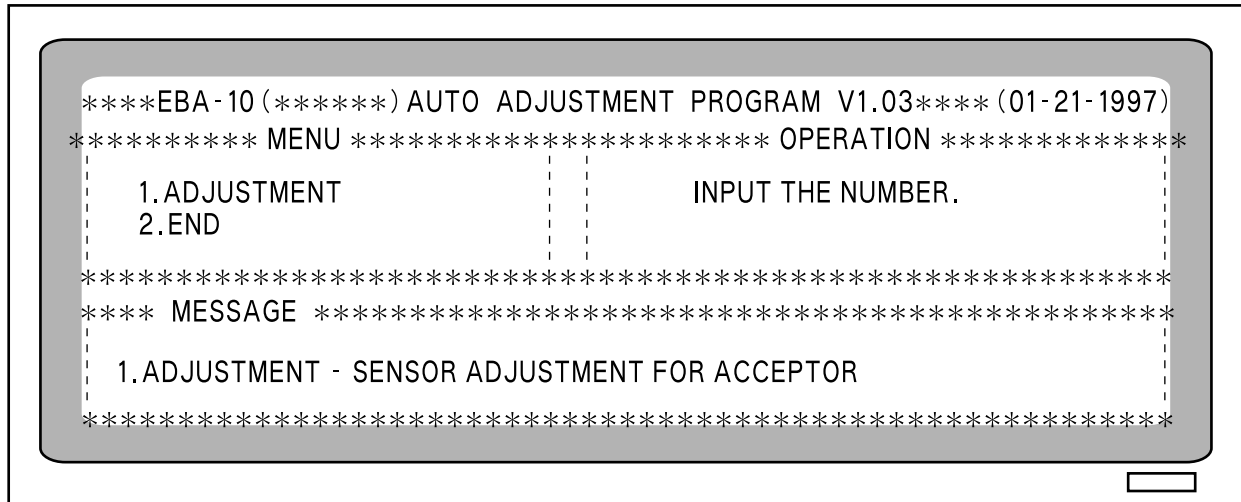
Screen 1 (Initial Screen)

(2) Set both MAYA and VM-450 to the test mode, and turn on VM-450. Connect the communication
    cable and confirm that MAYA is put in the test mode. Then, press the Enter key.

```
****EBA-10(******)AUTO ADJUSTMENT PROGRAM V1.03****(01-21-1997)
********** MENU ******************** OPERATION *************
   1.ADJUSTMENT                     CONNECT TO PC AND ACCEPTOR THEN
                                    HIT ENTER KEY.
***********************************************************
**** MESSAGE ***********************************************
   ACCEPTOR SET TO TEST MODE THEN MONITOR(VM450)POWER ON.
***********************************************************
```
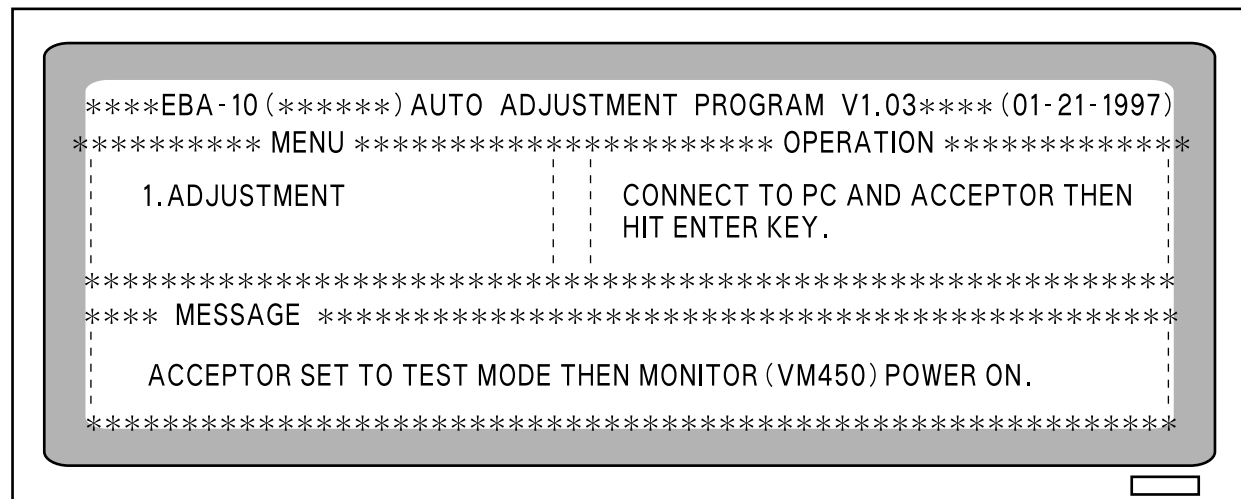
Screen 2

(3) The initialization of the EEPROM is being performed.

************** OPERATION **************

   INITIALIZE OF EEPROM.

****
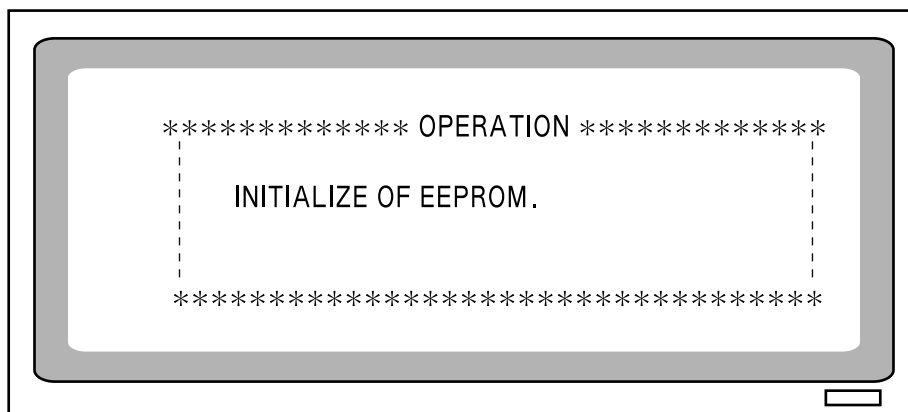
Screen 3

(4) The lever sensor is checked. (ON)

************** OPERATION *************

   <LEVER SENSOR CHECK>
   PAPER IN THE TRAY.HIT ENTER KEY.

****
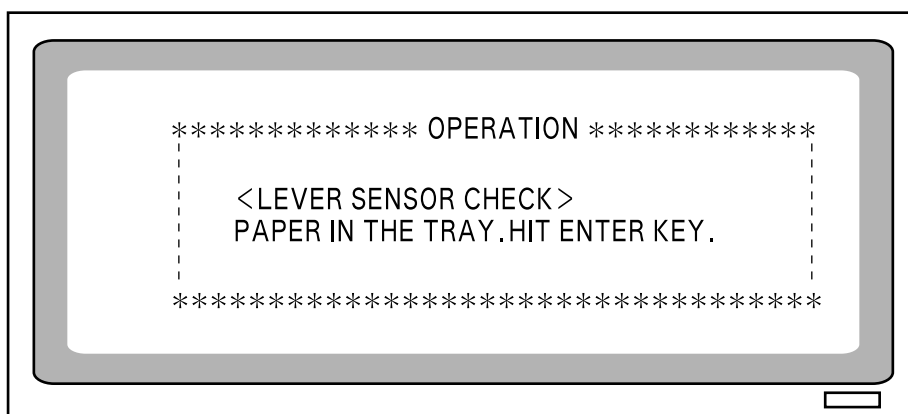
Screen 4

Open the MAYA tray and set the paper to check the lever sensors at the following 3 locations.

(3)

(1)   (2)

Paper
(150mm x 70mm,
copying paper, etc.)

Bill insertion slot
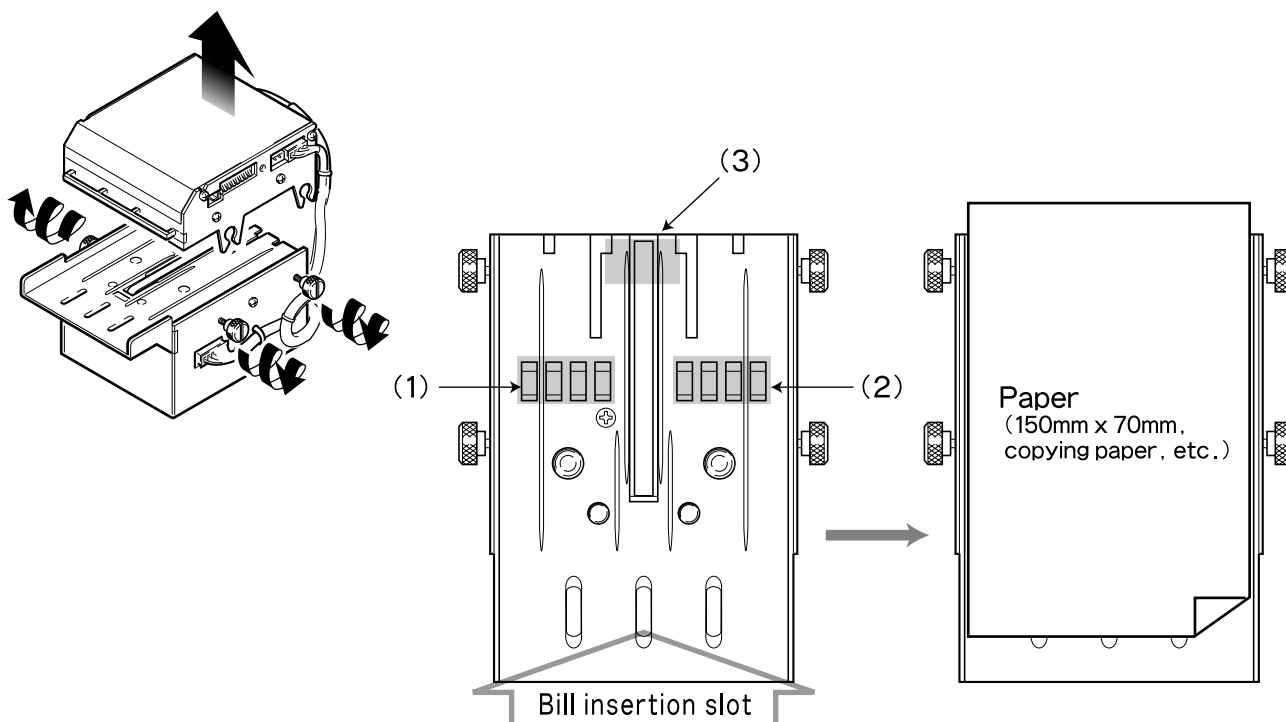
Close the tray and then press the Enter key.

(5) The lever sensor is checked. (OFF)

```
************ OPERATION ************

    <LEVER SENSOR CHECK>
    PAPER OUT OF THE TRAY.
    HIT ENTER KEY.
************************************
```
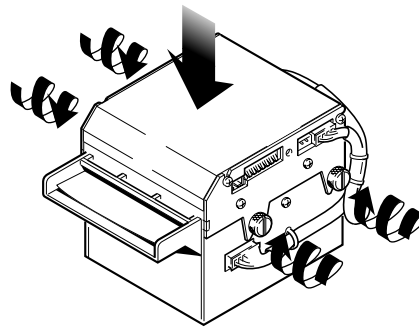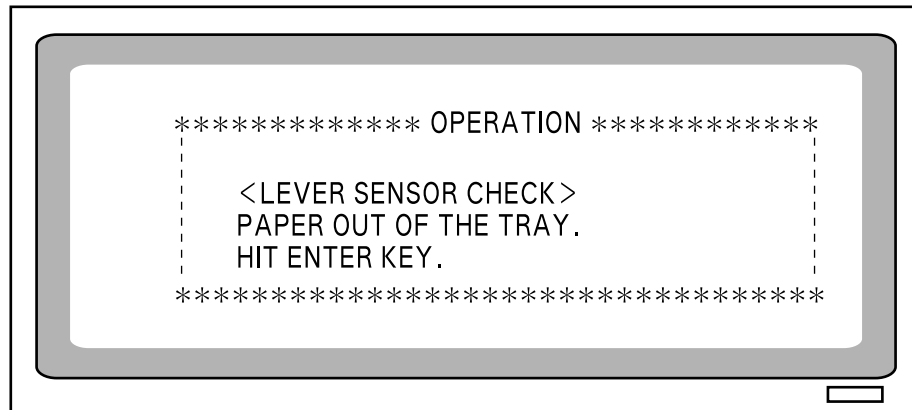
Screen 5

Remove the paper from the tray and press the Enter key. At this time, make sure to close the trayandclose the knurls on both sides properly. (Otherwise, the adjustment value will be incorrect.)

(6) Photo sensor adjustment 1

```
************ OPERATION ************

    WHITE BASE PAPER IN THE TRAY.
    HIT ENTER KEY.
************************************
```

Screen 6

KS-34
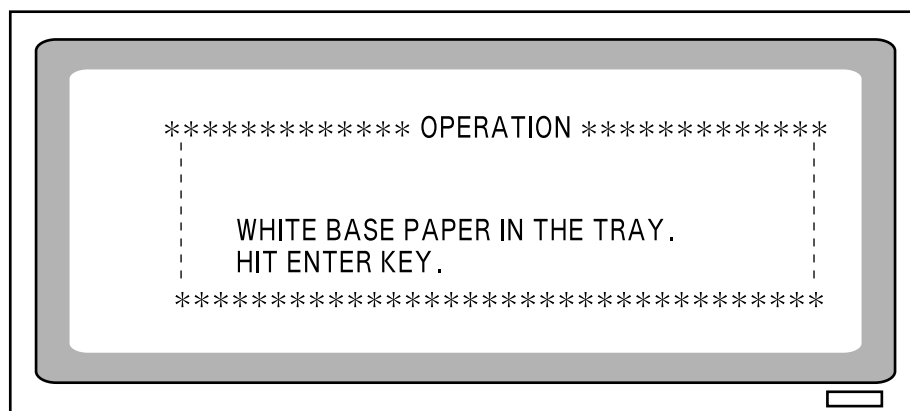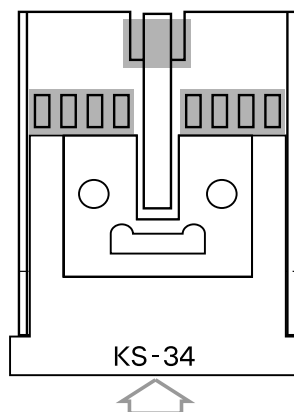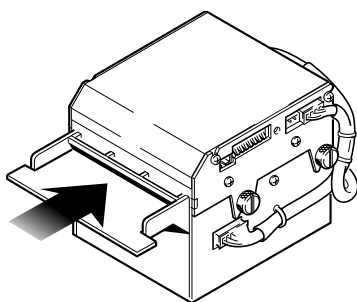
There is no need to open the tray.
Insert the base paper.

Make sure to place the base
paper properly on the tray.

After inserting the base paper in the tray, press the Enter key.

(7) During photo sensor adjustment (approximately 15 seconds)
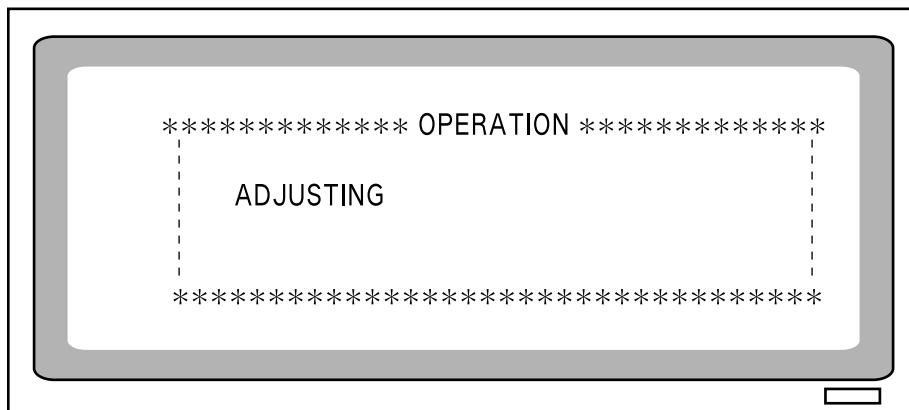
```
************ OPERATION *************

    ADJUSTING


**********************************
```
Screen 7

(8) Photo sensor adjustment 2
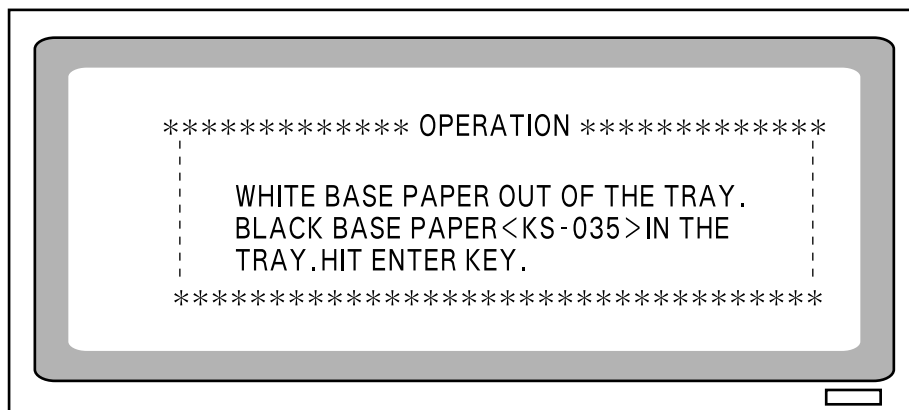
```
************ OPERATION *************

    WHITE BASE PAPER OUT OF THE TRAY.
    BLACK BASE PAPER<KS-035>IN THE
    TRAY.HIT ENTER KEY.
**********************************
```
Screen 8

Place the base paper KS-35 on the tray and then press the Enter key.

(9) During photo sensor adjustment (approximately 5 seconds)
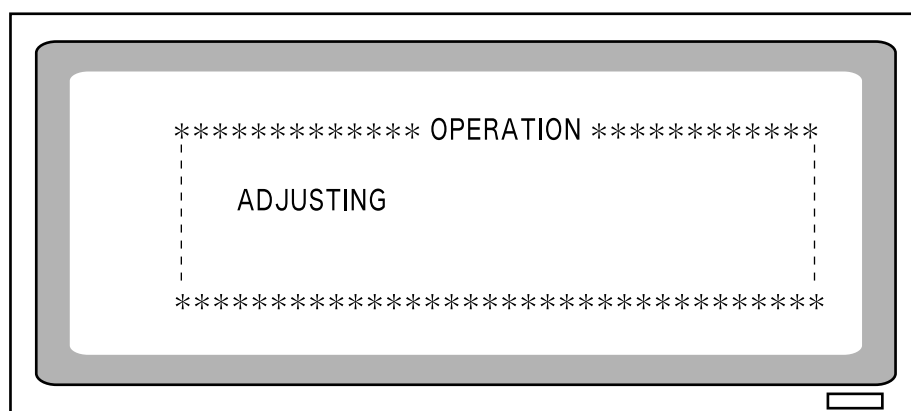
```
************ OPERATION ************

    ADJUSTING


**********************************
```
Screen 9

(10) Photo sensor adjustment 3

```
************* OPERATION *************

    BLACK BASE PAPER OUT OF THE TRAY.
    HIT ENTER KEY.

************************************
```
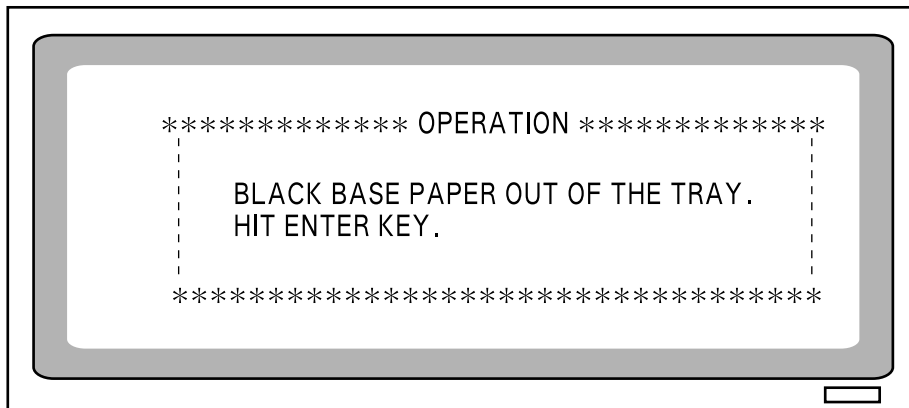
Screen 10

Remove the base paper and then press the Enter key.

(11) During photo sensor adjustment (approximately 10 seconds)

```
************* OPERATION *************

    ADJUSTING

************************************
```
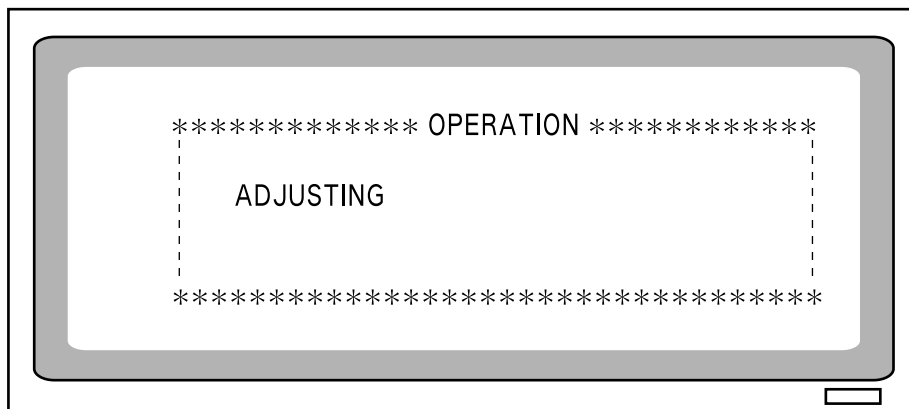
Screen 11

Feed speed check

```
************ OPERATION *************

     MAG BOARD OUT OF THE TRAY
     HIT ENTER KEY.

**********************************
```
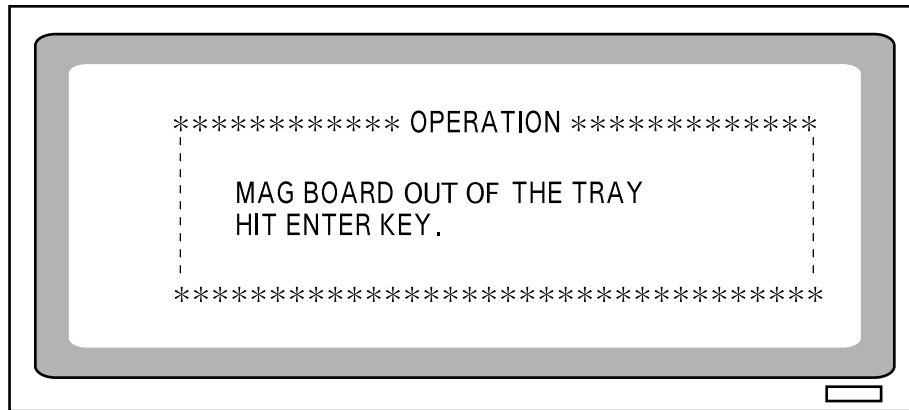
Screen 14

Remove the MAG board and press the Enter key.

(12) During the feed speed check

```
************ OPERATION *************

   TESTING MOTOR

**********************************
```
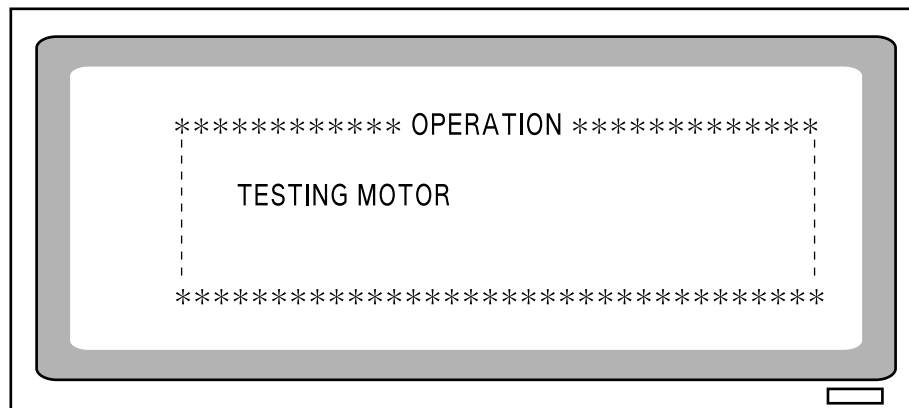
Screen 15

(13) Completion of adjustment

```
************ OPERATION *************

   COMPLETE.HIT ENTER KEY.

**********************************
```
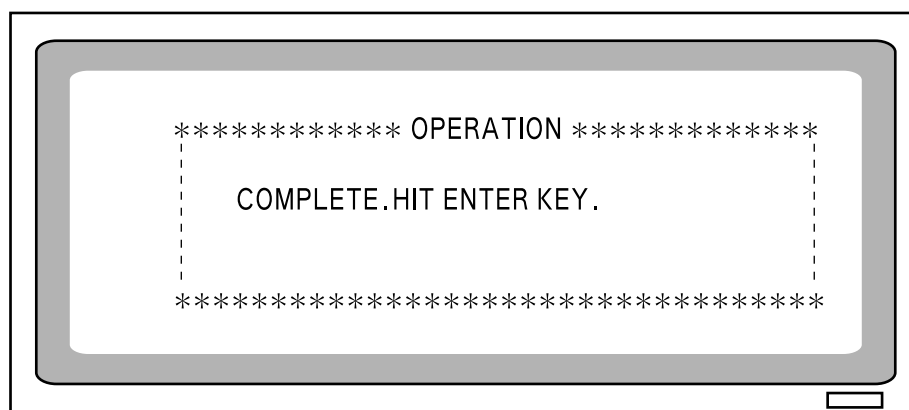
Screen 16

The adjustment has been completed. Press the Enter key and then turn off VM-450. The program returns to the initial screen (screen 1). To adjust another MAYA, select menu 1 (ADJUSTMENT).

> MAYA is provided with a mode for confirming the bill receiving (identification) status. See the items in the attached "Test Mode" document for more information.

Do not use bills like the ones below to confirm the bill receiving operation. If you insert such a bill, it will not be identified properly.

(a) Bills that are dirty, worn, wet, torn, and badly wrinkled.
(b) Bills with folded and overlapped corners or edges.
(c) Bills that have considerably different cutting dimensions and printing displacement.
(d) Bills that are stained or have iron particles on them.
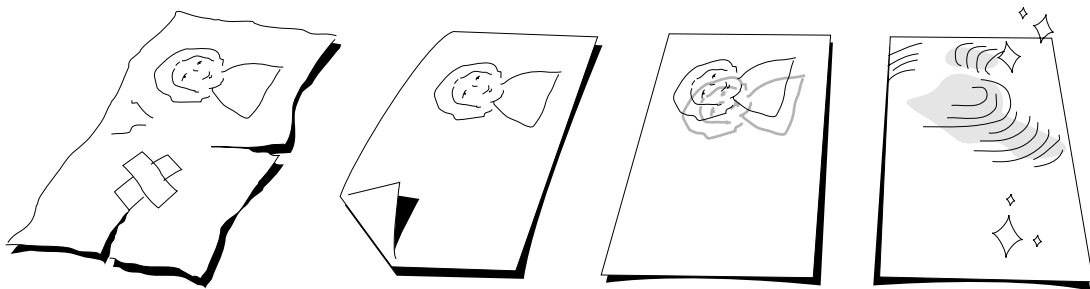
6 Error Messages

When a trouble occurs during adjustment, an error message will appear on the OPERATION comment field or MESSAGE comment field and the adjustment will be interrupted. Repair or replace the parts in accordance with the message.

OPERATION error list

Communication error	Communication is disabled. Check the settings and connections of the acceptor and PC
Cannot initialize of EEPROM	CPU board error. Replace the CPU board.
Acceptor lever fail	Lever detection trouble.
Adjustment error	Adjustment is disabled. Or, incorrect adjustment value.

You can also determine the trouble location from the error message displayed on the MESSAGE comment field.

MESSAGE error list

Position	Message
①	Back lever cannt turn***
②	Left levercannot turn***
③	Right levercannot turn***
④	Front IR :D/A:***A/D:***REG:* Front RED :D/A:***A/D:***REG:* Up IR :D/A:***A/D:***REG:* Up RED :D/A:***A/D:***REG:*
⑤	Left IR :D/A:***A/D:***REG:* Left RED :D/A:***A/D:***REG:*
⑥	Right IR :D/A:***A/D:***REG:* Right RED :D/A:***A/D:***REG:*
⑦	Up IR REF :D/A:***A/D:***REG:* Up RED REF :D/A:***A/D:***REG:*
⑧	Dw IR REF :D/A:***A/D:***REG:* Dw RED REF :D/A:***A/D:***REG:*
⑨	M LRED :D/A:***A/D:***REG:*
⑩	M RRED :D/A:***A/D:***REG:*
⑪	Moter speed :***

7 Messega-Position Conversion Diagram

You can determine the trouble location from the number of the MESSAGE error list. The "UP"
and "DOWN" indications in the figure are classified based on the bill feed route.

① U P (Flapper)   ⑪ DOWN (Conveyor unit)

② U P (Sensor)   ③ U P (Flapper)

⑤ UP & DOWN (Sensor)

⑨ UP & DOWN (Sensor)   ⑥ UP & DOWN (Sensor)

⑦ U P (Sensor)   ⑩ UP & DOWN (Sensor)

⑧   DOWN (Sensor)   ④ UP & DOWN (Sensor)

Bill insertion slot

Bill insertion slot   U P

                                             DOWN
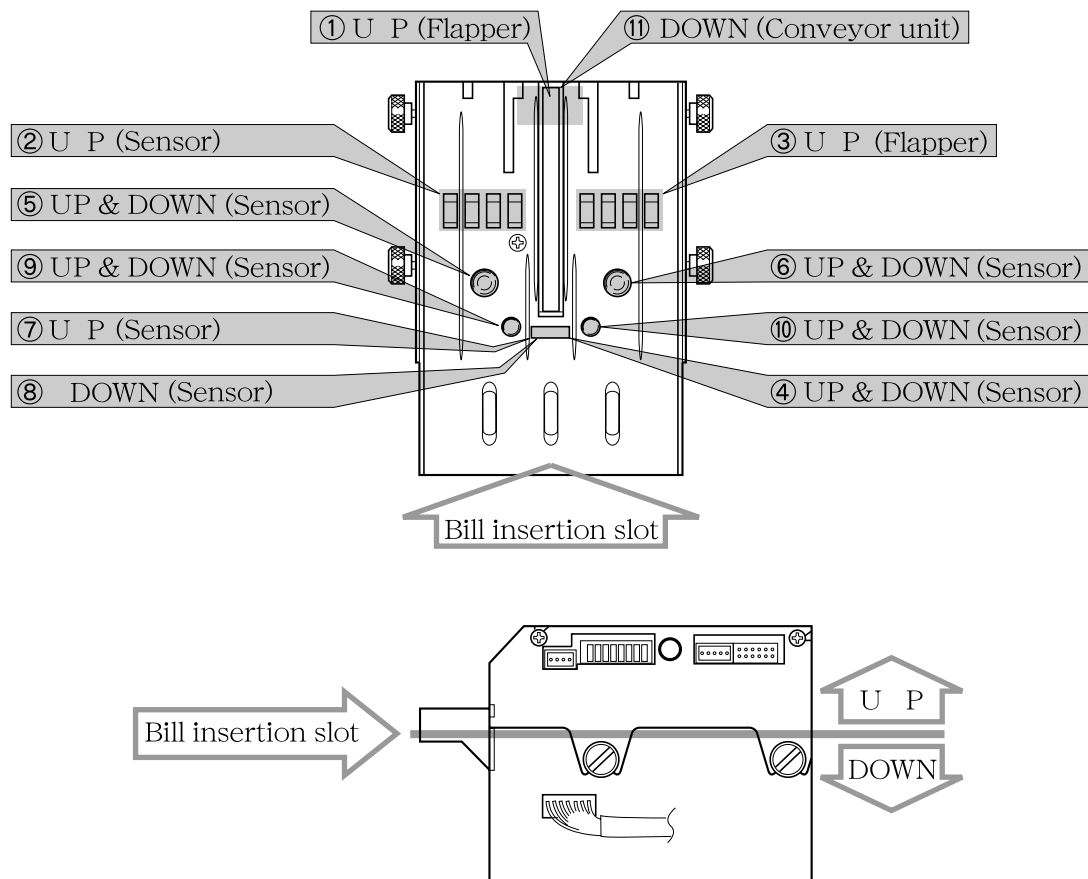
8 Connecting the MAYA to VM-450

(1) Connect MAYA and VM-450 in the following manner.
   Set the DIP switches of both MAYA and VM-450 to the test mode. Be sure to turn off VM-450before
   setting the test mode.

EBA-02

EBA-02 DIP switch setting

OFF 1 2 3 4 5 6 7 8

VM-450 Test Bench

VM-450 DIP switch setting

OFF 1 2 3 4 5 6 7 8
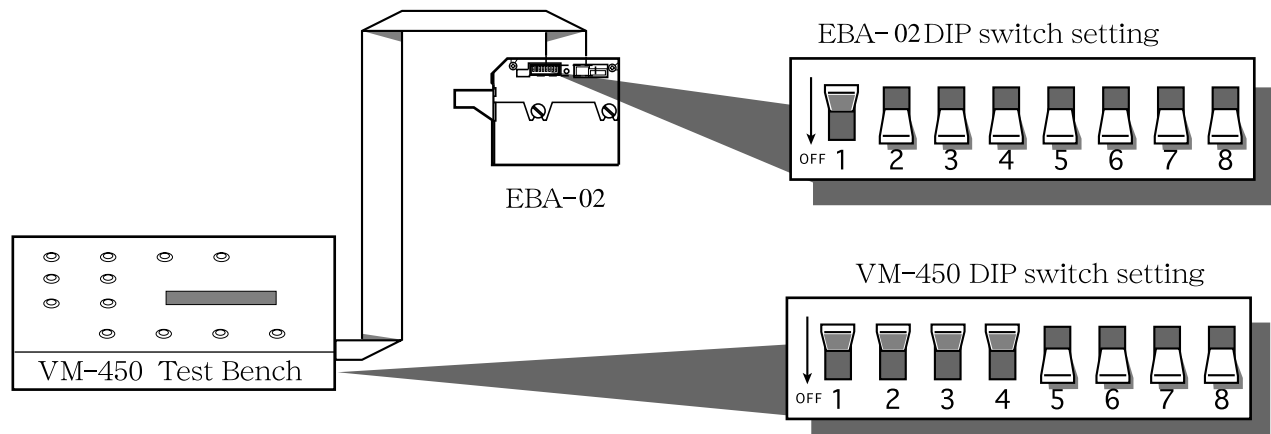
(2) Make sure that the DIP switches of both VM-450 and MAYA are set correctly. Then, turn on VM-450.
(3) The BSY LED of VM-450 lights and "_000_ _00" will appear on the segment display. At this time,
   the LED next to the DIP switch of MAYA will light.

This status is called the test mode. In the test mode, various operation tests are enabled.

9 Selection and Execution the Test Items

As shown in the table below, a test item can be selected by DIP switches number 2 to 8, and it is executed by turning OFF DIP switch number 1. When you set DIP switch number 1 to ON, the test item is canceled and the test mode standby status is resumed.

List of Test Items

No.	DIP switches (1 2 3 4 5 6 7 8)	Item	Function
①	Off — all others unset	Acceptor feed motor forward rotation test	Confirms the forward rotation speed of the acceptor feed unit.
②	Off; SW2 ON	Acceptor feed motor reverse rotation test	Confirms the reverse rotation speed of the acceptor feed unit.
③	Off; SW3 ON	Acceptor sensor ON/OFF test	Confirms the ON/OFF level of each bill sensor of the acceptor feed unit.
④	Off; SW2, SW3 ON	Acceptor I/F test (OUT)	Confirms the output signal sent from the acceptor to an external device (controller).
⑤	Off; SW4 ON	Acceptor I/F test (IN)	Confirms the input signal sent from an external device (controller) to the acceptor.
⑥	Off; SW2, SW4 ON	Reserved	Reserved
⑦	Off; SW3, SW4 ON	Reserved	Reserved
⑧	Off; SW2, SW3, SW4 ON	Acceptor aging test	Confirms the operation of the acceptor.
⑨	Off; SW5 ON	Reserved	Reserved
⑩	Off; SW2, SW5 ON	Acceptor bill reception test	Confirms the bill identification and operation. (Acceptor only)
⑪	Off; SW2–SW8 ON	Acceptor DIP switch test	Confirms ON/OFF of the acceptor DIP switch.

Note: Automatic adjustment can be performed while the stacker box is installed in the unit. When the guide block and mouthpiece are mounted on the insertion slot of the tray, remove them.

10 Description of Test Items

(1) Acceptor feed motor forward rotation test
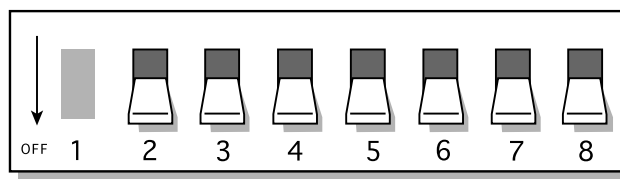
Confirms the forward rotation speed of the acceptor feed unit. The feed speed is displayed on the VM-450.
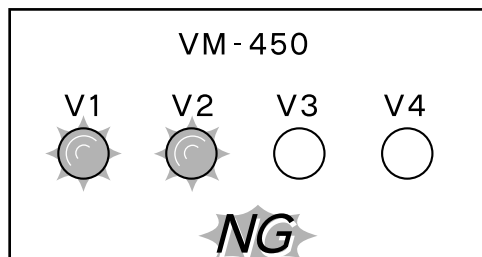
VEND1 and VEND2 turn on. Fast feed speed
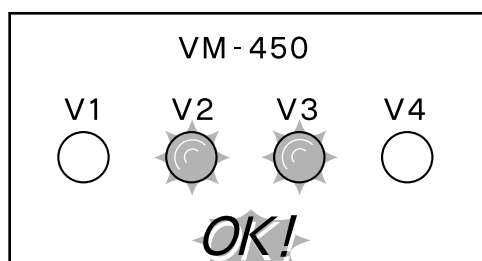
VEND2 and VEND3 turn on. Correct feed speed
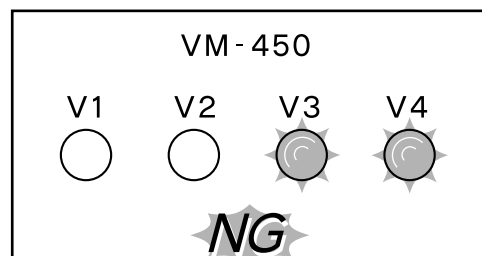
VEND3 and VEND4 turn on. Slow feed speed

(2) Acceptor feed motor reverse rotation test
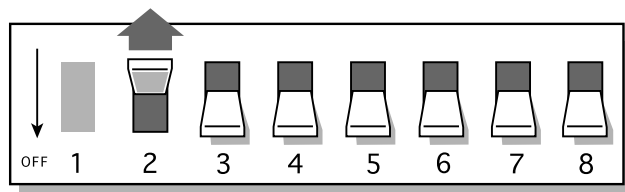
The feed speed is displayed on VM-450 in the same manner as (1)."Acceptor feed motor forward rotation test".

(3) Acceptor sensor ON/OFF test
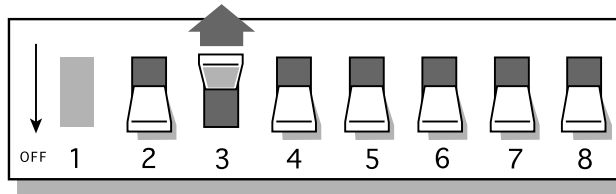
Confirms the ON/OFF level of each bill sensor of the acceptor feed unit.

Note: You can perform this test only after performing the automatic adjustment.

When a bill is fed into the feed route of the acceptor, the VEND1 to VEND4, ABN, and STKF LEDs of VM-450 will light. (This test only confirms the operation of sensors which detect whether a bill is present or not.)
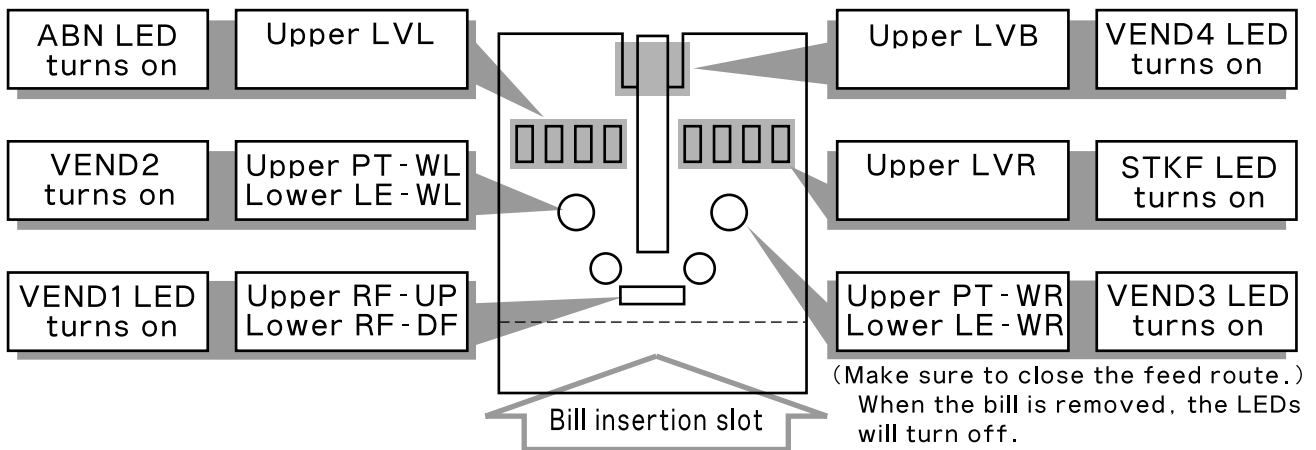
(4) Acceptor I/F test (OUT)
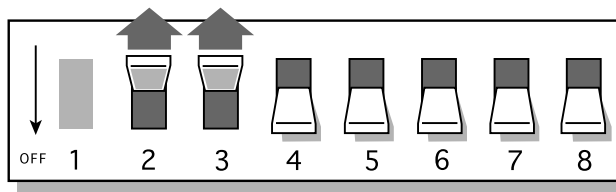
This test allows you to confirm the operation of the output signal line from the acceptor to the external device (controller) according to the lighting sequence of the VM-450 LEDs.

The signals sent from the acceptor are sequentially indicated by the VEND1, VEND2, VEND3, VEND4, ABN, and STKF LEDs of VM-450. (Make sure the BSY LED is lit.)
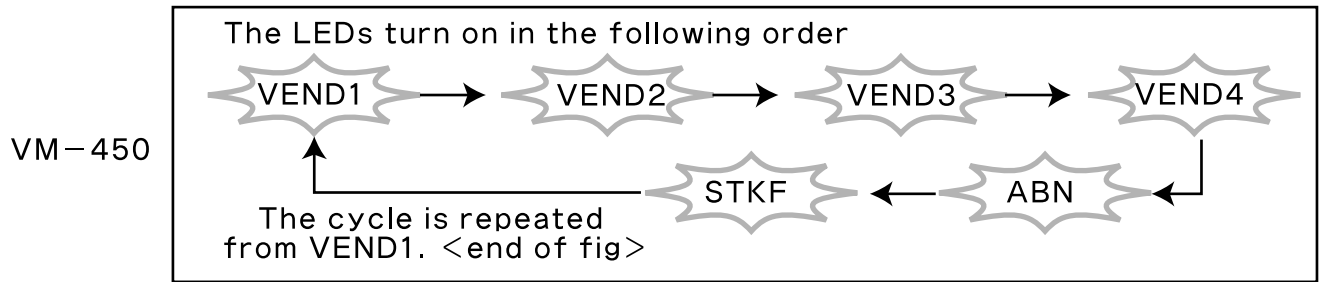
(5) Acceptor I/F test (IN)
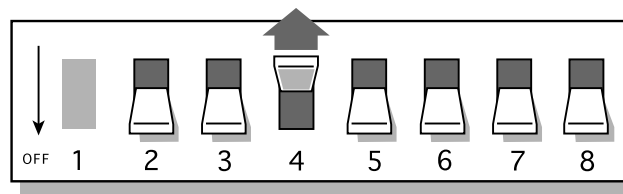
This test allows you to confirm the operation of the input signal line from the external device (controller) to the acceptor according to the lighting sequence of the VM-450 LEDs.

When the ENABLE/DISABLE, REJ, and ACK switches are turned on at VM-450, the acceptor will output a signal to turn on the LEDs of VM-450.
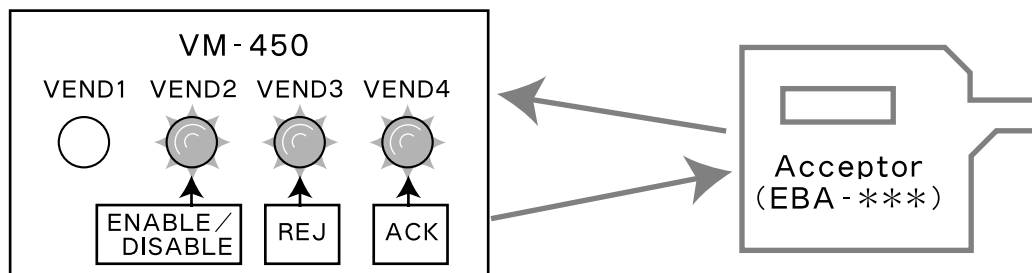
When the ENABLE/DISABLE, REJ, and ACK switches are turned on, the VEND2 to VEND4 LEDs will light.

Before performing this test, perform 3-(4) "Acceptor I/F test (OUT)".

(6)   Omitted because this switch is reserved.

(7)   Omitted because this switch is reserved.

(8) Acceptor aging test
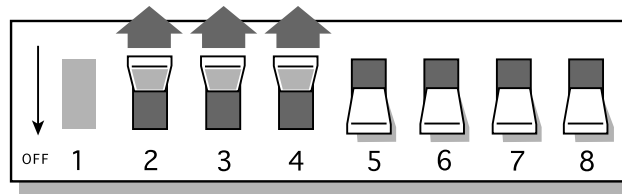
    Periodically repeats the acceptor operation.

When an error occurs during the operation of the acceptor, the VEND1 to VEND3 LEDs and ABN LED of VM-450 are turned on and the acceptor operation is terminated.

    An error code is displayed depending on the number of times the LED on the CPU board flashes.
    (See 4-(1) Error Code (Malfunction) List.)

(9) Omitted because this switch is reserved.

(10)Acceptor bill reception test
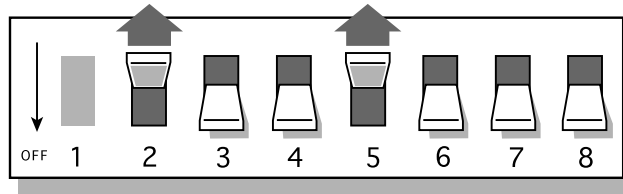
Confirms the bill receiving operation of only the acceptor.

After the initial operation is completed, a bill can be received and the rate of receiving bills can be confirmed. When the model (ROM) supporting the HI security is tested, bill receiving with the HI security function can be confirmed if you turn on DIP switch No. 8 after the initial operation is completed.

> Note: Even if DIP switch No. 1 is set to ON, the test mode will not be resumed when this test is executed.

VM‑450 currency type signal indication

Currency type	V 1	V 2	V 3
Currency type 1	☆	—	—
Currency type 2	—	☆	—
Currency type 3	☆	☆	—
Currency type 4	—	—	☆
Currency type 5	☆	—	☆
Currency type 6	—	☆	☆

VM-450 indicates that a bill has been received. The type of currency is indicated by means of the combination of lighted LEDs.

If a bill is not received successfully, check the following items.

(a) A bill is not accepted

Acceptor operation error. Check the number of times the LED on the CPU board flashes and repair or replace the necessary parts. (See 4-(1) Error Code (Malfunction) List.)

(b) A bill is rejected

Acceptor identification unit error. Check the number of times the LED on the CPU board flashes and adjust (clean the identification unit), repair, or replace the necessary parts. (See 4-(2) Error Code (Rejecting a Bill) List.)

> Note: Do not use bills like the ones below to confirm the bill receiving operation. If you insert such a bill, it will not be identified properly.

(a) Bills that are dirty, worn, wet, torn, and badly wrinkled.
(b) Bills with folded and overlapped corners or edges.
(c) Bills that have considerably different cutting dimensions and printing displacement.
(d) Bills that are stained or have iron particles on them.
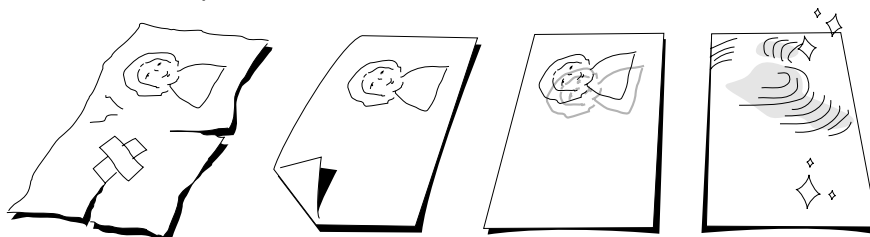
(11)Acceptor DIP switch test
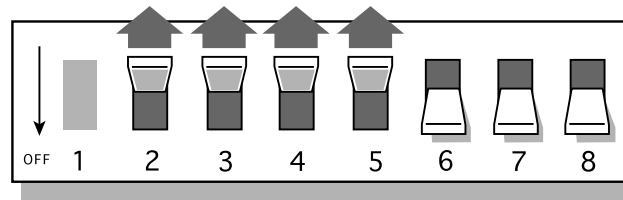
Confirms the operation of all DIP switches.

When the DIP switch test starts, all DIP switches are turned ON. However, the DIP switches correspond to the VEND1 to VEND4 LEDs of VM-450 when contact defects are confirmed.
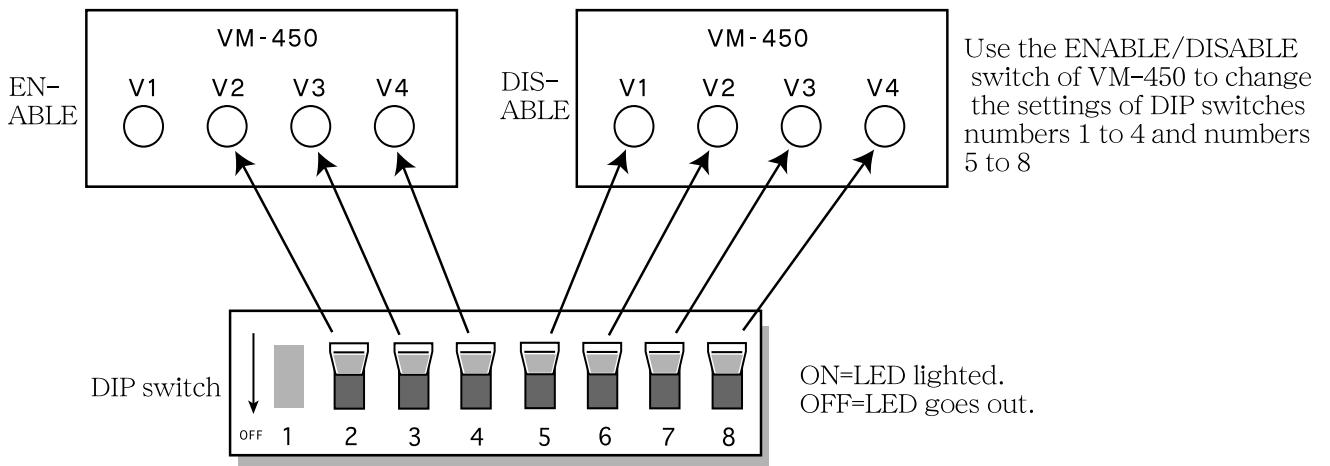
When you turn on DIP switch No. 1, this test mode is ended and the DIP switch operation can no longer be confirmed. However, if switch No. 1 is defective, you cannot enter or exit the test mode and thus the trouble can be detected.

11 Error Code

If an operation cannot be performed successfully when you perform various operation tests, the LED on the CPU board will flash. You can determine the error cause and error location by confirming the flashing and the number of times the LED flashes.

(a) The bill is not accepted. (The LED on the CPU board flashes slowly.)

Acceptor operation error. Check the number of times the LED flashes and repair or replace the necessary parts. (See 4-(1) Error Code (Malfunction) List.)

(b) After the bill is received, it is rejected. (The LED on the CPU board flashes rapidly.)

Acceptor identification unit error. Check the number of times the LED flashes and adjust, repair, or replace the necessary parts. (See 4-(2) Error Code (Rejecting a Bill) List.)

(1) Error Code (Malfunction) List.

No. of times LED flashes	Description of error
1	Reserved.
2	Reserved.
3	Reserved.
4	(1) Bill stays in the acceptor.
5	Acceptor feed motor speed error.
6	(1) Acceptor motor was started but does not rotate. (2) Acceptor motor was stopped but does not stop. (3) No signal is sent from the acceptor encoder sensor.
7	Reserved.
8	Reserved.
9	Reserved.
10	Reserved.
11	Reserved.
12	Sensor turned on at a timing impossible in normal operation.

(2) Error Code (Rejecting a Bill) List

No. of times LED flashes	Description of error
1	Bill was inserted at a crooked angle. (Crooked insertion)
2	
3	Bill stays in the acceptor feed route. (Jamming paper)
4	Photo sensor error 1. (X-rate error)
5	Bill feed error. (Sync detect error)
6	Judgment error. (Near error)
7	Photo sensor error 2. (Paltern error)
8	Photo sensor error 3. (Photo level error)
9	Receiving inhibited bill was rejected. (Inhibit signal)
10	Reject signal was input. (Reject signal)
11	Lever sensor has detected an error. (Lever on error)
12	Back sensor has detected an error. (back sensor on error)
13	Incorrect length bill. (Length error)
14	Photo sensor error 4. (Ir/Red error)
15	Photo sensor error 5. (Characteristic error)

*: When the Photo Sensor errors 1 to 5 occur frequently,
   clean the acceptor head and adjust the sensor.

12 Sensor layout

JCM Banknote Acceptor

MAYA

Trouble Shooting

Contents

Introduction

- Many troubles of the validator are caused by minor reasons. Before replacing any part, be sure to check whether connectors are connected properly and there is no line breakage in a cable harness.

- If the validator frequently rejects a bill, the magnetic head and conveyor belt may have a layer of iron particles on them. Clean these areas.

- Observe the operating conditions of the validator carefully when you turn on the power. This is important for the detection of a trouble cause and defective location.

- Whenever you disassemble and repair the validator head, be sure to adjust the sensors.

> Perform repairs in accordance with Chapter 7, "Adjustment Manual Performance Test", and Chapter 4, "Disassembly Procedure".

1 Outline of Troubleshooting

MAYA can find a trouble cause by performing the "bill identification operation test". The performance test or sensor adjustment is performed according to the identified trouble cause and the necessary repairs and replacement of parts are performed.
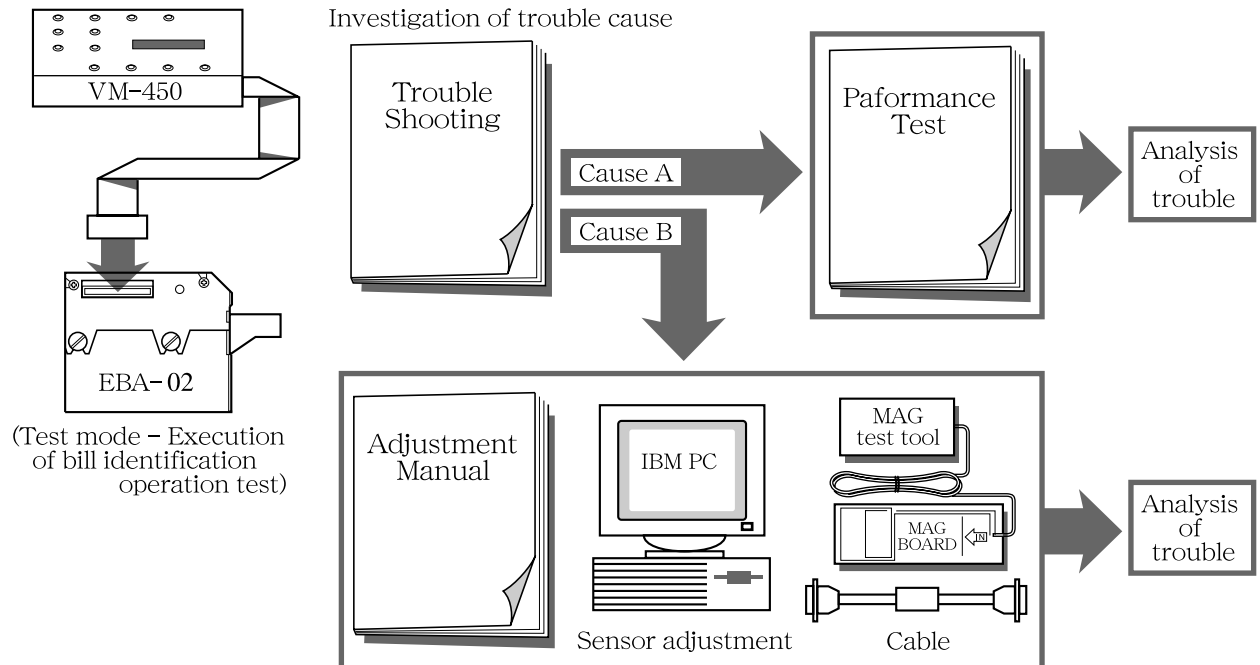
2 Connecting the MAYA and VM-450

Connect MAYA and VM-450 in the following manner.

Connect the 26-pin flat cable to the acceptor.
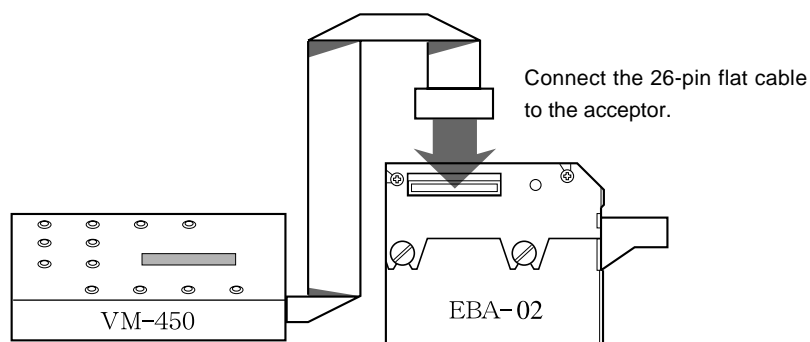
3 Bill Identification Operation Test Procedure

3-1 To perform the bill identification operation test, first set the acceptor to the test mode standby status.
Set the DIP switches of MAYA and VM-450 as shown in the figure below. Make sure to turn off VM-450 before changing the DIP switch.

EBA-02 DIP switch setting

EBA-02

OFF 1 2 3 4 5 6 7 8

VM-450 Test Bench

VM-450 DIP switch setting

OFF 1 2 3 4 5 6 7 8
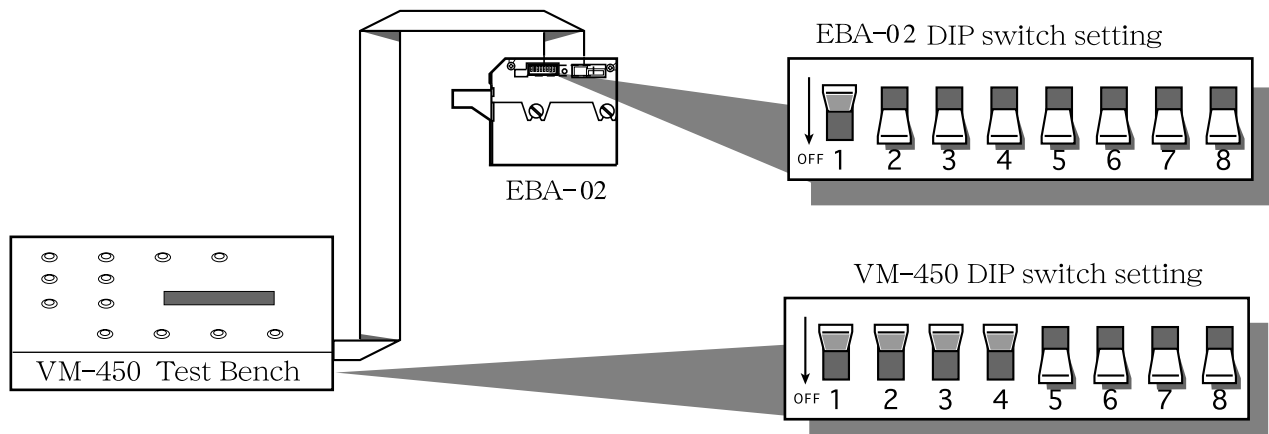
3-2 When you turn on the power of VM-450, the BSY LED lights and "_000__00" will appear on the segment display.
At this time, the DIP switch next to the LED ofMAYA will light.

This is called the test mode standby status. You can perform various operation tests in this status.

3-3 Executing the identification operation tests
Set the DIP switch of the acceptor as shown in the figure below.

MAYA DIP switch setting

OFF | OFF 1 2 3 4 5 6 7 8
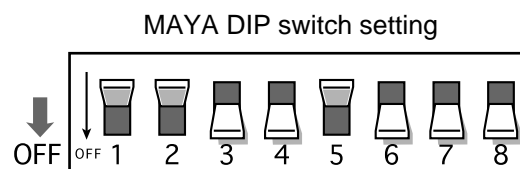
3-4 When you turn off DIP switch No. 1 of the acceptor, the acceptor can receive a bill and you can confirm the bill receiving rate after the initial operation is completed.
VM-450 indicates that the bill is received and the type of currency is indicated by means of the VEND1 to VEND3 LED combinations.

VM-450 currency type signal indication

VM‑450

BSY   VEND1 VEND2 VEND3

Currency type	VEND1	VEND2	VEND3
Currency type 1	◎	—	—
Currency type 2	—	◎	—
Currency type 3	◎	◎	—
Currency type 4	—	—	◎
Currency type 5	◎	—	◎
Currency type 6	—	◎	◎

◎ LED Light

Do not use bills like the ones below to confirm the bill receiving operation. If you insert such a bill, it will not be identified properly.

(a) Bills that are dirty, worn, wet, torn, and badly wrinkled.

(b) Bills with folded and overlapped corners or edges.

(c) Bills that have considerably different cutting dimensions and printing displacement.

(d) Bills that are stained or have iron particles on them.
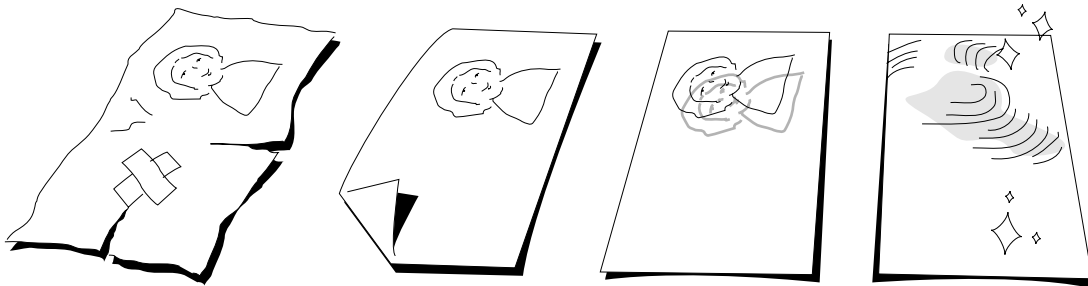
4 MAYA Trouble Indication and Bill Rejection Trouble Indication

4-1 When the MAYA cannot store the bills successfully, the LED on the CPU board will flash as shown in the figure below. You can determine the trouble by confirming the flashing condition and number of times the LED flashes.

(a) The bill is not accepted

MAYA operation error. The LED on the CPU board flashes slowly. Check the number of times the LED flashes and see 6 "Error Code (Malfunction) List".

(b) After the bill is received, it is rejected.

Acceptor identification unit error. The LED on the CPU board flashes rapidly. Check the number of times the LED flashes and see 6 "Error Code (Rejecting a Bill) List".

Check how the LED flashes.

(a) Malfunction − LED flashes slowly

1 sec. ON

0.5 sec. OFF   2 sec. (interval)

x times   Repeats x times

(b) Rejection − LED flashes rapidly.

0.5 sec. ON

0.5 sec. OFF   2 sec. (interval)

x times   Repeats x times
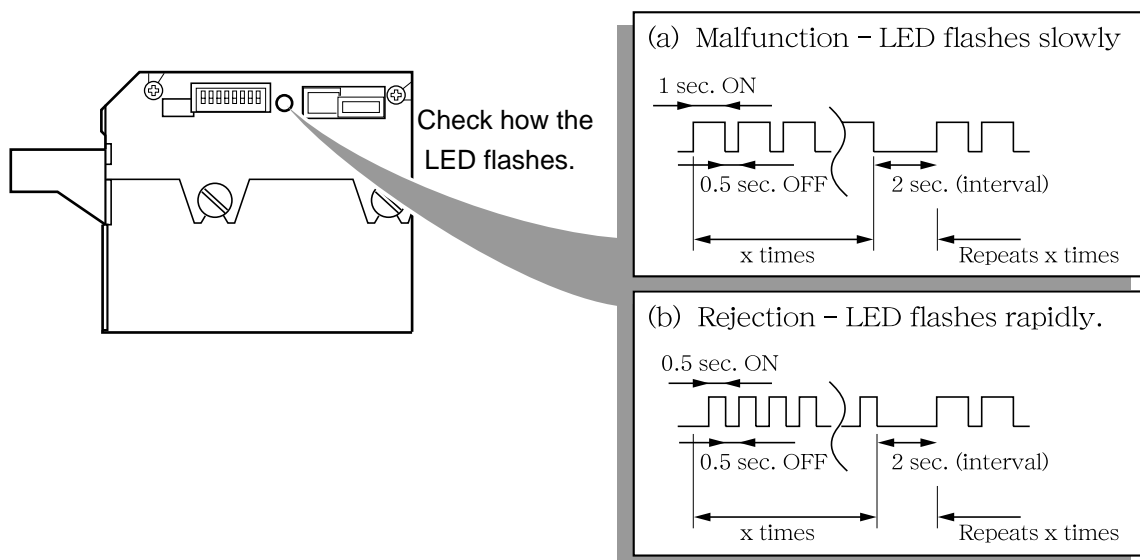
5 Trouble Classification

The trouble causes are mainly divided into the following 6 types. Check the operating conditions.

(1) Test mode cannot be started.	→	page 6

(2) Indication LED does not turn on.	→	page 6

(3) Normal signal cannot be sent from acceptor to controller.	→	page 6

(4) Bill is rejected and rate of receiving bills is poor.	→	page 7

(5) Bill is not fed smoothly. (Jammed in feed route.)	→	page 7

(6) Bill is not accepted. The LED next to theDIP switch flashes repeatedly. (Stop state due to malfunction)	→	page 8

(1) Test mode cannot be started.

```
┌─────────────────────┐      ┌─────────────────────┐ NG  ┌─────────────────────┐
│ Check whether the ROM│      │ Check the acceptor CPU│────▶│ Replace the ROM.    │
│ of the acceptor is    │─────▶│ board ROM.          │     │                     │
│ properly installed.   │      │                     │     │                     │
└──────────┬──────────┘      └─────────────────────┘     └─────────────────────┘
           │                          OK
           ▼
┌─────────────────────┐      ┌─────────────────────┐ NG  ┌─────────────────────┐
│ Check whether power is│      │ CPU board check     │────▶│ Replace the CPU board.│
│ supplied to the CPU   │─────▶│ result OK?          │     │ -> Adjust the sensor.│
│ board.               │      │                     │     │ (*1)                │
└─────────────────────┘      └─────────────────────┘     └─────────────────────┘
```

(2) Indication LED does not turn on.

```
┌─────────────────────┐      ┌─────────────────────┐ NG  ┌─────────────────────┐
│ Perfomance test     │      │ Indication LED check │────▶│ Replace the indication│
│ Check 3-(4) (Acceptor│─────▶│          result OK? │     │               LED.  │
│ I/F OUT test)       │      │                     │     │                     │
└─────────────────────┘      └──────────┬──────────┘     └─────────────────────┘
                                        ▼
                             ┌─────────────────────┐ NG  ┌─────────────────────┐
                             │ LED harness check   │────▶│ Replace the LED harness.│
                             │          result OK? │     │                     │
                             └─────────────────────┘     └─────────────────────┘
                                        OK
                             ┌─────────────────────┐
                             │ Replace the CPU board.│
                             │ -> Adjust the sensor.│
                             │ (*1)                │
                             └─────────────────────┘
```

(3) Normal signal cannot be sent from acceptor to controller.

```
┌─────────────────────┐      ┌─────────────────────┐ NG  ┌─────────────────────┐
│ Check whether the   │      │ Check the acceptor CPU│────▶│ Replace the ROM. LED.│
│ interface protocol  │─────▶│ board ROM.          │     │                     │
│ complies with the   │      │                     │     │                     │
└──────────┬──────────┘      └─────────────────────┘     └─────────────────────┘
           │
           ▼
┌─────────────────────┐      ┌─────────────────────┐ NG  ┌─────────────────────┐
│ Performance test    │      │ Acceptor interface cable│──▶│ Replace the acceptor│
│  Check 3-(4)        │─────▶│ (26-pin) check result OK?│   │ interface cable.    │
│ (Acceptor I/F OUT   │      │                     │     │                     │
│ test)               │      └─────────────────────┘     └─────────────────────┘
│  Check 3-(5)        │              OK
│ (Acceptor I/F IN    │      ┌─────────────────────┐
│ test)               │      │ Replace the CPU board.│
└─────────────────────┘      │ -> Adjust the sensor.│
                             │ (*1)                │
                             └─────────────────────┘
```

┌──┐
│ *1: See Chapter 7, "Adjustment Manual" for details about the sensor adjustment. │
└──┘

(4) Bill is rejected and rate of receiving bills is poor.

| Check whether the ROM being used complies with the country corresponding | → | Check the acceptor CPU board ROM. | NG → | Replace the ROM. |

| Clean the tray and adjust the sensors. (*1) □ Is the adjustment result | NG *2 → | Relay harness check result OK? | NG → | Replace the relay harness. -> Adjust the sensors. (*1) |

| The rate of bill reception is poor. | → | CPU board check result OK? | NG → | Replace the CPU board. -> Adjust the sensors. (*1) |

OK → Replace the LED board. -> Adjust the sensors. (*1)
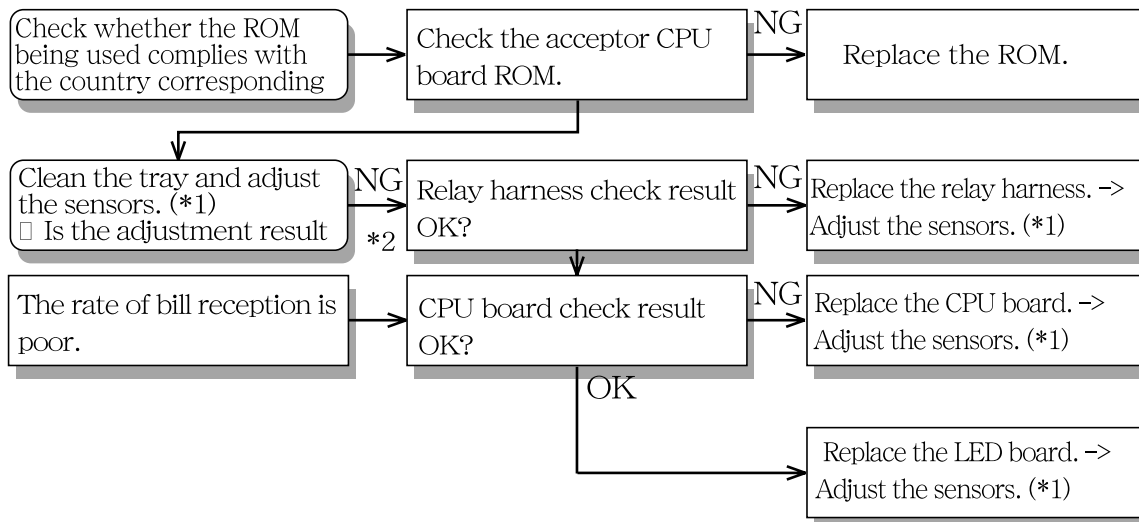
*1: See Chapter 7, "Adjustment Manual" for details about the sensor adjustment.

*2: Determine the defective position from 6 "Error Message" in the Adjustment Manual and replace the parts as required.

(5) Bill is not fed smoothly. (Jammed in feed route.)
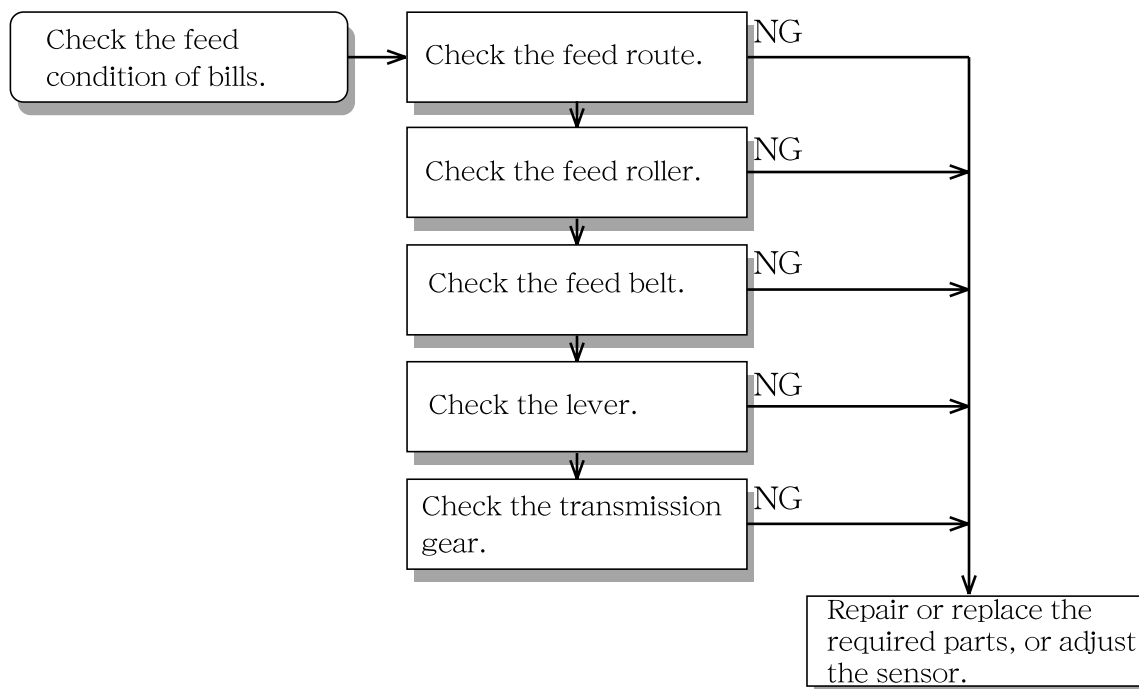
| Check the feed condition of bills. | → | Check the feed route. | NG → |

Check the feed roller. | NG →

Check the feed belt. | NG →

Check the lever. | NG →

Check the transmission gear. | NG →

Repair or replace the required parts, or adjust the sensor.

(6) Bill is not accepted. The LED next to the DIP switch flashes repeatedly.
         (Stop state due to malfunction)

Check the number of times the LED flashes.	→	LED flashes 4 times. (Acceptor sensor error.)	→	Sensor adjustment (*1) (See Adjustment Manual.)
	→	LED flashes 5 times. (Acceptor head speed error.)	→	Performance test Check 3-(1) (Acceptor fo rward rotation test)
	→	LED flashes 6 times. (Acceptor feed system error.)	→	Sensor adjustment (*1) (See Adjustment Manual.)
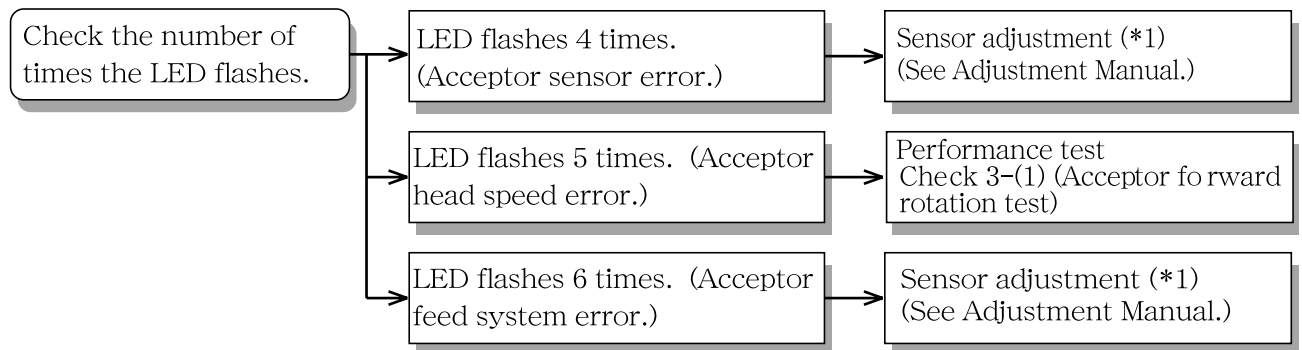
*1: See Chapter 7, "Adjustment Manual" for details about the sensor adjustment.

6 Error Code

Error Code (Malfunction) List.

No. of times LED flashes	Description of error
1	Reserved.
2	Reserved.
3	Reserved.
4	(1) Bill stays in the acceptor.
5	Acceptor feed motor speed error.
6	(1) Acceptor motor was started but does not rotate. (2) Acceptor motor was stopped but does not stop. (3) No signal is sent from the acceptor encoder sensor.
7	Reserved.
8	Reserved.
9	Reserved.
10	Reserved.
11	Reserved.
12	Sensor turned on at a timing impossible in normal operation.

Error Code (Rejecting a Bill) List

No. of times LED flashes	Description of error	
1	Bill was inserted at a crooked angle.	(Crooked insertion)
2	Reserved.	
3	Bill stays in the acceptor feed route.	(Jamming paper)
4	Photo sensor error 1.	(X-rate error)
5	Bill feed error.	(Sync detect error)
6	Judgment error.	(Near error)
7	Photo sensor error 2.	(Paltern error)
8	Photo sensor error 3.	(Photo level error)
9	Receiving inhibited bill was rejected.	(Inhibit signal)
10	Reject signal was input.	(Reject signal)
11	Lever sensor has detected an error.	(Lever on error)
12	Back sensor has detected an error.	(back sensor on error)
13	Incorrect length bill.	(Length error)
14	Photo sensor error 4.	(Ir/Red error)
15	Photo sensor error 5.	(Characteristic error)

*: When the Photo Sensor error 1 to 5 occur frequently,
   clean the acceptor head and adjust the sensor.

7 Sensor layout
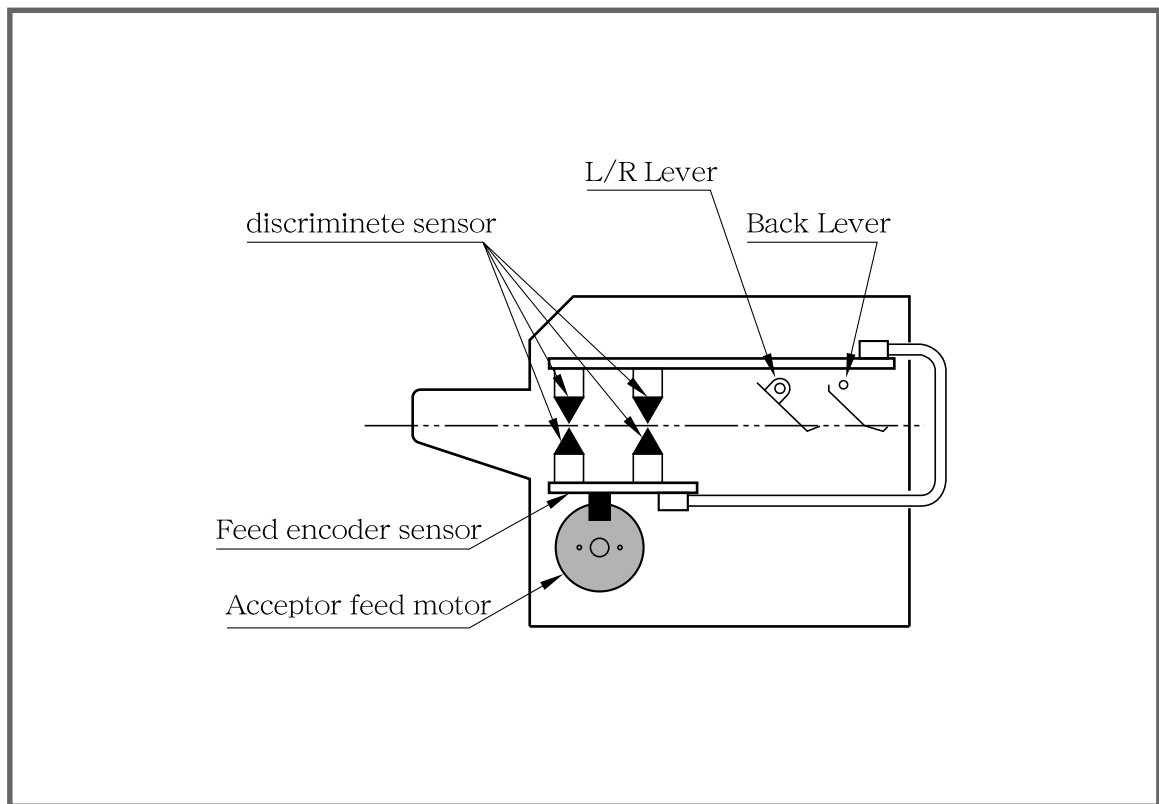
Printed circuit board connection diagram

Relay harness
990-05-02

LED board
990-06-02A

CN1	
1	○
2	○
3	○
4	○
5	○
6	○
7	○
8	○
9	○
10	○
11	○
12	○
13	○
14	○
15	○
16	○

BROWN
RED
ORANGE
YELLOW
GREEN
BLUE
PURPLE
GRAY
WHITE
BLACK
BROWN
RED
OLENGE
YELLOW
GREEN

C PUboard
990-06-01A

CN2	
1	
2	
3	
4	
5	
6	
7	
8	
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10	
11	
12	
13	
14	
15	

CN3	
1	○
2	○
3	○
4	○
5	○
6	○
7	○
8	○
9	○
10	○
11	○
12	○

Feed motor

+ BROWN
RED
-

	1
	2

LIST
850-04-03
Feed moto harness

CN4	
1	LED-1
2	LED-2
3	LED-3
4	LED-4
5	GND

CN1	
12V	1
GND	2
12V	3
GND	4
VEND1 +	5
VEND1 -	6
VEND2 +	7
VEND2 -	8
VEND3 +	9
VEND3 -	10
BUSY	11
BUSY	12
ABN +	13
ABN -	14
INH +	15
INH -	16
ACK +	17
ACK -	18
REJ +	19
REJ -	20
DATA VAL +	21
DATA VAL -	22
STKF +	23
STKF -	24
TXD	25
RXD	26

CN5	
○	1
○	2
○	3
○	4

990-05-02

MAG board
990-06-03A

CN1	
1	○
2	○
3	○

BROWN
RED
OLENGE

MAG harness

CN6	
○	1
○	2
○	3

JCM Banknote Acceptor

MAYA

Parts List

Contents

Parts Diagram

Parts List

No.	EDP-No.	Parts Name
1	049325	Cover
2	055524	CPU Substrate Unit
3	042477	M2.6x5 Bind Tapping Screw (black)
4	055410	U-Guide Type M
5	049356	Side Plate R Assy.
6	049357	Side Plate L Assy.
7	042477	M2.6x5 Bind Tapping Screw (black)
8	046073	M2.6x4 Bind Screw (black)
9	042379	Screw
10	049331	Shutter shaft
11	049326	Shutter R
12	049327	Shutter L
13	049359	Shutter Spring R
14	049360	Shutter Spring L
15	003705	Ø2 E-type Clip (SUS)
16	049330	End Lever
17	049332	Lever Pin
18	042383	Spring-3
19	042376	Pin-1
20	005229	Head Roller Spring
21	042352	Roller-2
22	049329	Spring Bracket-3
23	042361	Spring Bracket-1
24	042477	M2.6x5 Bind Tapping Screw (black)
25	040343	Reflector Sensor Lens
26	055411	D-Guide (Type M)
27	055533	LED Substrate Unit
28	042477	M2.6x5 Bind Tapping Screw (black)
29	042353	Sensor Cover
30	042394	Motor Bracket Assy.
31	042348	Pulley-1
32	042347	Roller-1
33	042385	Timing belt 103 MXL 4.8V
34	003707	Ø3 E-type Clip (SUS)
35	064598	Gear-1

Parts List

No.	EDP-No.	Parts Name
36	003705	Ø2 E-type Clip (SUS)
37	042392	Pulley Arm Assy.
38	042351	Pulley-2
39	042345	Gear-2
40	005230	Spring-2
41	056305	Motor Unit
42	003600	M3x5 Screw
43	064597	Encorder
44	014548	M2.6x5 Flat Head Screw (black)
45	049322	Frame
46	049323	Front Cover
47	049324	Rear Cover
48	046073	M2.6x4 Bind Screw (black)
49	042477	M2.6x5 Bind Tapping Screw (black)
50	055534	Relay Harness
51	034864	Cable Tie
52	066661	MAG Dummy
53	040342	Sensor Bush (Ø5)
54	056813	Rom Cover
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